

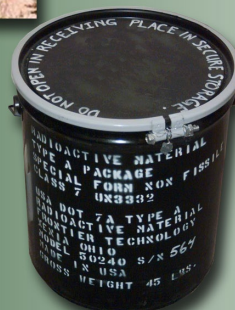
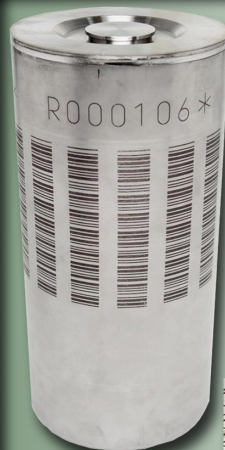
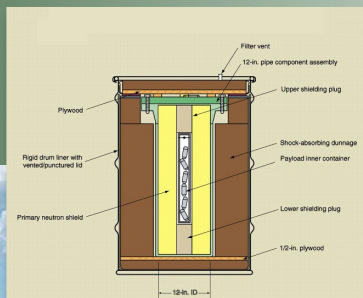
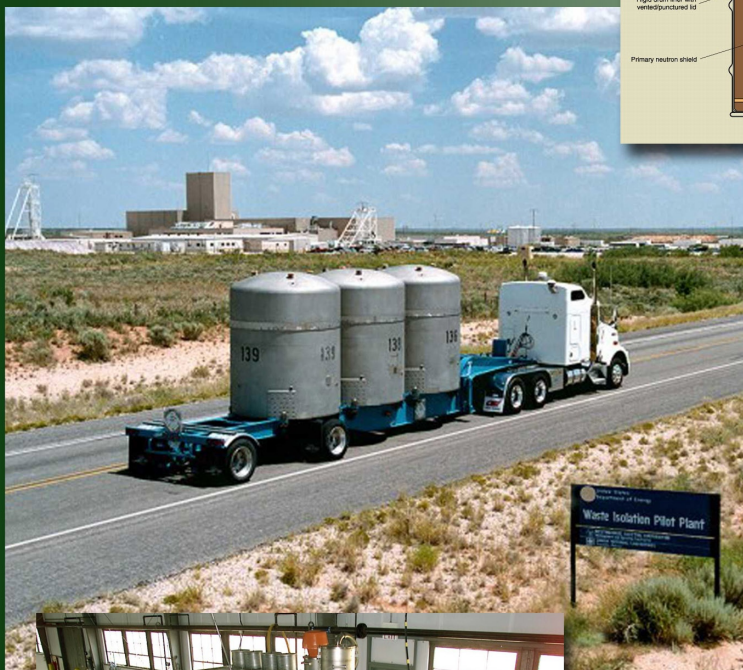
# NONACTINIDE ISOTOPES AND SEALED SOURCES MANAGEMENT GROUP



## NUCLEAR MATERIALS FOCUS AREA



# 2nd Joint NISSMG / NMFA Small Sites Needs Workshop



Las Vegas, NV

April 23-25, 2002



## **TABLE OF CONTENTS**

**Executive Summary**

**Workshop Coordination Team**

**Workshop Introduction – Brent Ives**

**Attendance List**

**Presentations by Service Providers**

**Presentations by Sites**

---

**Appendix A - Announcements and Invitations**

**Appendix B – Workshop Agenda**

**Appendix C - Breakout Group Information**

**Appendix D – Evaluation of Workshop by Attendees**

The 2<sup>nd</sup> Joint NISSMG/NMFA Small Sites Needs Workshop was conducted on April 23-25, 2002 in Las Vegas, Nevada. The primary workshop objective was to assist smaller DOE sites with nuclear materials issues by providing a forum where sites could be exposed to a broad range of solutions, perspective from other sites and the remediation services offered by service provider groups within the DOE complex. Another objective was to properly document small sites' needs as presented at the workshop. The workshop was sponsored by the Nuclear Materials Focus Area and the EM Nuclear Materials Stewardship groups from the Albuquerque DOE Operations Office. Small sites with NIMMSS registered accountable amounts of nuclear materials were expressly invited to attend, yet others with needs were also welcome to participate (see Announcements and Invitations). In all, 45 sites were invited to participate.

Seventy-seven participants were in attendance including those representing 15 small sites, 10 service providers, various DOE offices, and workshop organizers. Small sites were presented with information from service providers, groups from throughout DOE, which are organized to remediate nuclear materials and waste issues (see Workshop Agenda). Sites were asked to articulate their nuclear materials and waste issues. Sites in attendance were:

- \* Ames Laboratory
- \* Argonne National Laboratory-East
- \* Bechtel Nevada
- \* Brookhaven National Laboratory
- \* GE Nuclear Energy - Vallecitos
- \* Honeywell, FM&T
- \* Los Alamos National Laboratory
- \* Lawrence Berkeley National Laboratory
- \* Lawrence Livermore National Laboratory
- \* Oak Ridge National Laboratory
- \* Pacific Northwest National Laboratory
- \* Portsmouth Gaseous Diffusion Plant - Ohio
- \* Sandia National Laboratories - Albuquerque
- \* Sandia National Laboratories - Livermore
- \* Westinghouse Savannah River

Sites were then given the opportunity to share their needs with the groups and service provider groups were allowed to share their capabilities and example projects. Service providers also shared the ways they could help small sites with their issues. Those service provider groups in attendance were:

- \* Non-actinide Isotope and Sealed Source Management Group
- \* Nuclear Materials Focus Group
- \* Legacy Weapon Component Processing
- \* National Transportation Program
- \* Nuclear Fuel Services, Inc.
- \* Office of Isotopes for Medicine and Science
- \* Off-site Source Recovery Project
- \* Tritium Recovery and Recycle Program
- \* Waste Generator Assistance and Technical Support
- \* Waste Elimination Team

Day two of the workshop was dedicated to conducting scheduled breakout groups where Sites with needs were provided time to formulate more solid relationships with service provider groups and document their needs with the workshop coordination group. Coordination group members were assigned to each breakout group to focus and document discussions providing for additional clarity for aligning needs with providers post meeting. In all, the service provider groups and all sites in attendance had discussions that began the process for a productive relationship. Several sites were given guidance that allowed for the establishment of a path forward that did not exist prior to their attendance at the workshop (see Breakout Group Information). There were 97 issues registered at the Workshop. A full analysis of the outcomes and effectiveness of the workshop is planned for publishing in late May or early June 2002.

Evaluations of the workshop were distributed and clearly indicated that participants very highly rated the workshop concept, methodology, venue and overall effectiveness. Many sites commented positively toward planning an annual workshop and offered suggestions on improving the workshop (see Evaluation of Workshop by Attendees). Numerous sites not attending the workshop stated that they were unable to attend for a variety of

reasons, but hoped that another workshop would be held. Nearly all of the 45 sites that were invited but could not attend mentioned that they would attend another workshop if held in the future. Several sites in attendance also stated that they would attend a future workshop if held, in order to report progress and keep up with the status of remediation efforts of program and service providers.

Brent Ives, Workshop Leader  
Lawrence Livermore National Laboratory

## **WORKSHOP COORDINATION TEAM**

### **SMALL SITES WORKSHOP #2 CORE TEAM**

Brent Ives – Lawrence Livermore National Laboratory (LLNL), Workshop Leader

Debbie Malone – LLNL, Workshop Coordinator

Dave Parks – Idaho National Engineering and Environmental Laboratory (INEEL), Core Team

Gary Polansky – Sandia National Laboratories (SNL), Core Team

### **ADDITIONAL WORKSHOP COORDINATORS**

Tracy Dunham – SNL

Paul Fuhrman – INEEL

Joe Jones – SNL

Kathy McBride – INEEL

Cathy Ottinger – SNL

David Sala – Sala and Associates (SNL contract)

J.D. Smith – INEEL

Traci Taul – INEEL

Liz Thiel – INEEL

Judi Wells – LLNL



# *2<sup>nd</sup> Joint NISSMG/NMFA Small Sites Needs Workshop*

Brent Ives

LLNL

April 23-25, 2002



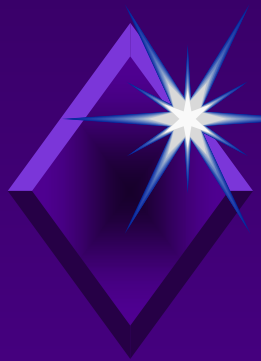
## *Objective and Sponsors*

- ◆ Provide Smaller Sites with technical and logistical support in solving their nuclear materials issues
- ◆ Sponsored by:
  - ◆ NMFA
  - ◆ Nuclear Materials Stewardship/NISSMG
  - ◆ LLNL - Workshop Logistics and Coordination



# *Program Approach and Strategy*

- ◆ Provide means by which Small Sites can get the help they need.
  - ◆ Workshops
  - ◆ Direct coordination support for developing needed technologies
  - ◆ Provide POC entity to find support
- ◆ This workshop -
  - Connect Small Sites with Service Providers

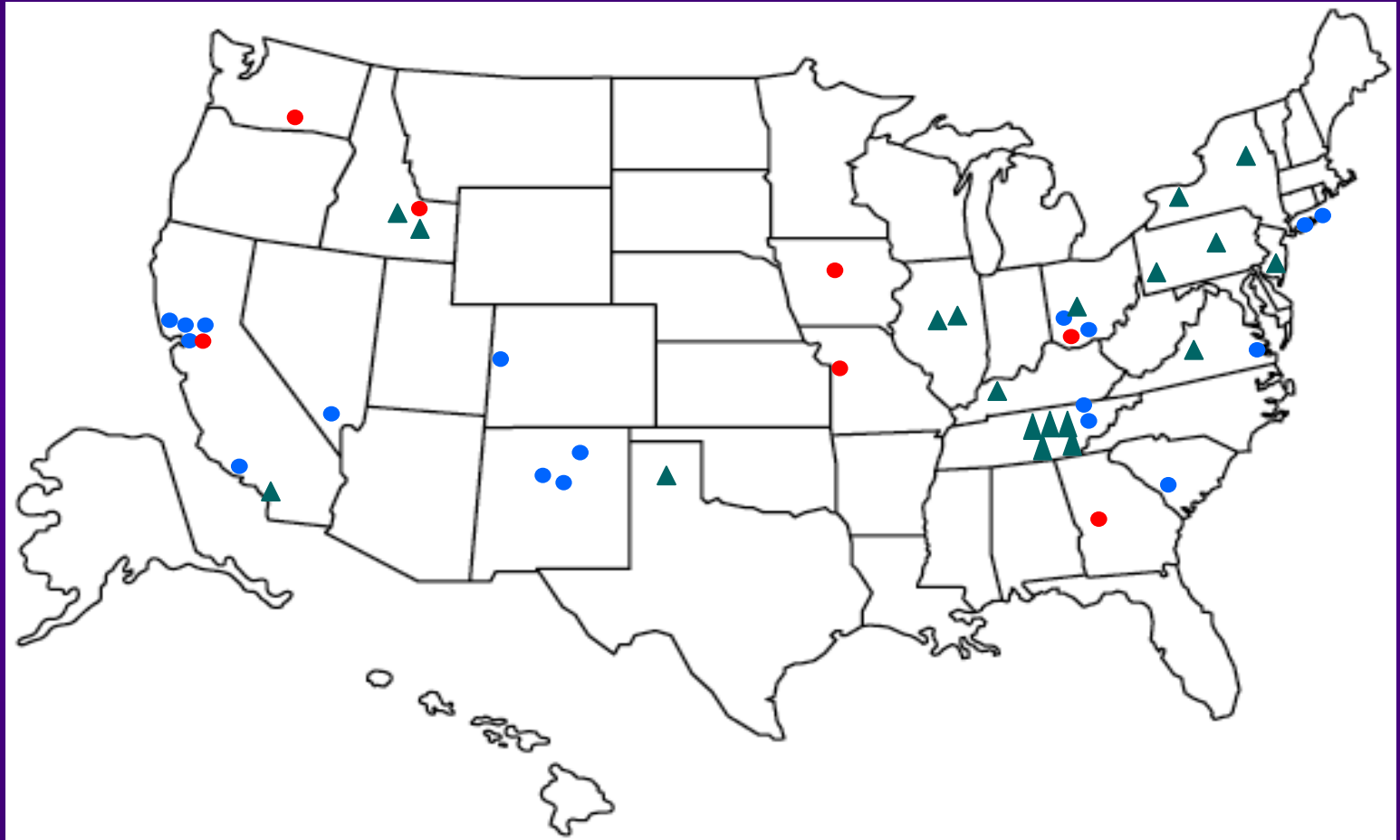


## *This Workshop - Desired Outcome*

- ◆ Each site has an opportunity to share their issues.
- ◆ Each service provider articulates their capabilities, accomplishments and abilities to assist.
- ◆ Sites and providers are allowed to create a pathway forward for their materials issues.

# 2nd Joint NISSMG/NMFA Small Sites Needs Workshop

## April 23-25, 2002



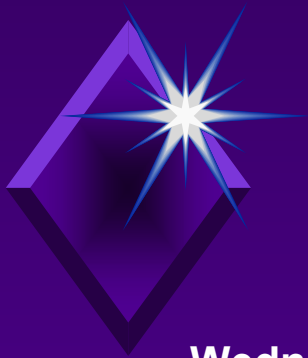
- Small Sites Attending 4/23/02 Workshop
- Small Sites Attending 9/11/01 Workshop
- ▲ Small Sites Not Attending Either Workshop



# *Agenda*

**Tuesday, April 23, 2002**

- |           |  |
|-----------|--|
| 8:00 AM   | Introduction <ul style="list-style-type: none"><li>• Logistics</li><li>• Agenda/Format</li></ul>                     |
| 8:15 AM   | Service Provider Presentations   |
| 10:15 AM  | Break  |
| 10:30 AM  | Service Provider Presentations (continued)   |
| 12:00 PM  | Lunch (provided by Workshop) <ul style="list-style-type: none"><li>• Served in Foyer of Palazzo Restaurant</li></ul> |
| 1:15 PM   | Site Presentations   |
| 3:00 PM   | Break  |
| 3:15 PM   | Site Presentations (continued)   |
| 4:30 PM   | Site to Service Provider Connections Planning  |
| 5-5:30 PM | Meeting Adjourned  |



# *Agenda*

**Wednesday, April 24, 2002**

8:00 AM Introduction/Agenda for Today's Workshop

- Remarks

8:15 AM Service Provider/Sites Connections

10:15 AM Break

10:30 AM Service Provider/Sites Connections (continued)

12:00 PM Lunch (provided by Workshop)

- Served in Foyer of Palazzo Restaurant

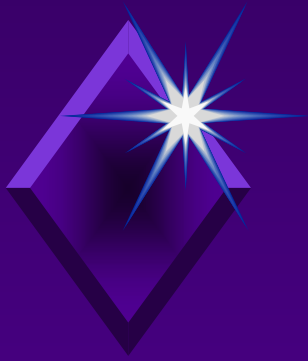
1:15 PM Service Provider/Sites Connections (continued)

3:00 PM Break

3:15 PM Service Provider/Sites Connections (continued)

4:30 PM Paths Forward, Final Needs Registration and Closeout

5:00 PM Meeting Adjourned



# *Agenda*

**Thursday, April 25, 2002**

6:00 AM Yucca Mountain Tour

- Meet in Tuscany Hotel Lobby for 6 AM Tour Bus Pickup

4:00 PM Tour Bus Arrives Back at the Tuscany Hotel

**Attendees**  
**2nd Joint NISSMG/NMFA Small Sites Needs Workshop**  
**April 23-25, 2002**

**Sites**

Dennis Barrett  
Lawrence Livermore National Laboratory  
P.O. Box 808, L-668  
Livermore, CA 94551  
Phone: 925/423-5132  
Fax: 925/424-4669  
barrett2@llnl.gov

Jay Beckel  
Ames Laboratory  
Iowa State University, G40  
Ames, IA 50011  
Phone: 515/294-7922  
Fax: 515/294-2155  
jbeckel@ameslab.gov

Kathy Carney  
Brookhaven National Laboratory  
E. 5th Avenue, Bldg. 860  
Upton, NY 11973  
Phone: 631/344-3378  
Fax: 631/344-7339  
kcarney@bnl.gov

Mary Donahue  
Honeywell, FM&T  
2000 E. 95th Street, 551 B30  
Kansas City, MO 64141-6180  
Phone: 816/997-3378  
Fax: 816/997-7257  
mdonahue@kcp.com

Darrell Fisher  
Pacific Northwest National Laboratory  
902 Battelle Blvd., P7-27  
Richland, WA 99352  
Phone: 509/373-2000  
Fax: 509/376-9781  
dr.fisher@pnl.gov

L. Kurt Galloway  
Bechtel Nevada  
P.O. Box 98521, NTS450  
Las Vegas, NV 89193  
Phone: 702/295-3523  
Fax: 702/295-3514  
gallowlk@nv.doe.gov

Bill Haag  
Los Alamos National Laboratory  
P.O. Box 1663, ADO-IFC/MS  
Los Alamos, NM 87545  
Phone: 505/667-5773  
Fax: 505/667-1673  
bhaag@lanl.gov

Steve Hensel  
Westinghouse Savannah River  
P.O. Box 616  
Aiken, SC 29808  
Phone: 803/952-3993  
Fax: 803/952-3600  
steve.hensel@srs.gov

Ed Hohman  
Bechtel Nevada  
P.O. Box 98521, NLV081  
Las Vegas, NV 89193  
Phone: 702/295-3798  
Fax: 702/295-1420  
hohmaneh@nv.doe.gov

Alice Ikenberry  
Pacific Northwest National Laboratory  
P.O. Box 999, P7-79  
Richland, WA 99352  
Phone: 509/373-5638  
Fax: 509/376-8821  
alice.ikenberry@pnl.gov

Joe Jones  
Sandia National Laboratories  
5800 Eubank, 6849/0779  
Albuquerque, NM 87185-0779  
Phone: 505/844-2822  
Fax: 505/844-2348  
jojones@sandia.gov

Wayne Larson  
Pacific Northwest National Laboratory  
P.O. Box 999, P7-28  
Richland, WA 99352  
Phone: 509/376-2483  
Fax: 509/376-1517  
wayne.larson@pnl.gov

Carlos Martinez  
GE Nuclear Energy-Vallecitos  
6705 Vallecitos Road, M/C  
Sunol, CA 94586  
Phone: 925/862-4481  
Fax: 925/862-4516  
carlos.martinez@gene.ge.com

Lance Mezga  
Oak Ridge National Laboratory  
P.O. Box 2008, MS 6023  
Oak Ridge, TN 37831-6023  
Phone: 865/574-7258  
Fax: 865/576-3515  
mezgalj@ornl.gov

Debby Oscar  
Sandia National Laboratories  
P.O. Box 5800, MS 1136  
Albuquerque, NM 87185  
Phone: 505/845-7030  
Fax: 505/284-4276  
dsoscar@sandia.gov

Melda Rafferty  
Department of Energy  
P.O. Box 700  
Piketon, OH 45661  
Phone: 740/897-5521  
Fax: 740/897-2982  
raffertymj@oro.doe.gov

Diane Rocco  
Brookhaven National Laboratory  
E. 5<sup>th</sup> Avenue, Bldg. 860  
Upton, NY 11973  
Phone: 631/344-8122  
Fax: 631/344-3223  
dkinney@bnl.gov

Chris Rodrigues  
Westinghouse Savannah River  
Savannah River Site, Bldg. 703-F  
Aiken, SC 29808  
Phone: 803/952-4525  
Fax: 803/952-4429  
george.rodrigues@srs.gov

Nancy Rothermich  
Lawrence Berkeley National Laboratory  
One Cyclotron Road, MS 85B-101  
Berkeley, CA 94720  
Phone: 510/486-4644  
Fax: 510/486-6603  
nerothermich@lbl.gov

Ward Rupprecht  
Los Alamos National Laboratory  
P.O. Box 1663, C927  
Los Alamos, NM 87545  
Phone: 505/665-7335  
Fax: 505/667-7596  
rupprecht@lanl.gov

Lynn Shakelfoot  
Sandia National Laboratories  
7011 East Avenue, MS9281  
Livermore, CA 94550  
Phone: 925/294-3067  
Fax: 925/294-3324  
leshack@sandia.gov

Latrelle Smith  
Bechtel Nevada  
P.O. Box 98521  
Las Vegas, NV 89193  
Phone: 702/295-3190  
Fax: 702/295-7039  
smith1@nv.doe.gov

Albert Stadelmaier  
Los Alamos National Laboratory  
P.O. Box 1663, C-924  
Los Alamos, NM 87545  
Phone: 505/667-9746  
Fax: 505/667-5734  
afs@lanl.gov

Warren Strong  
Sandia National Laboratories  
1515 Eubank, 3111/MS 1116  
Albuquerque, NM 87123-1116  
Phone: 505/284-3313  
Fax: 505/844-8950  
wrstron@sandia.gov

Keith Trychta  
Argonne National Laboratory  
9700 S. Cass  
Argonne, IL 60439  
Phone: 630/252-1476  
Fax: 630/252-3153  
ktrychta@anl.gov

## **Others**

Phillip Gray  
Perma-Fix

## ***Service Providers***

Jeffrey Allender  
Westinghouse Savannah River  
Savannah River Site, Bldg. 773-41A  
Aiken, SC 29808-0001  
Phone: 803/725-4187  
Fax: 803/725-2978  
jeff.allender@srs.gov

Michael Blau  
LLNL/Legacy Weapons  
P.O. Box 808, L-362  
Livermore, CA 94551  
Phone: 925/424-4212  
Fax: 925/422-3165  
blau1@llnl.gov

Jhon Carilli  
NNSA Nevada/WATS  
232 Energy Way, MS505  
North Las Vegas, NV 89030  
Phone: 702/925-0672  
Fax: 702/295-1153  
carilli@nv.doe.gov

Timothy Carlson  
BBWI/WET  
2525 Fremont Ave,  
Idaho Falls, IA 83402-3875  
Phone: 208/526-8062  
Fax: 208/526-1061  
tc1@inel.gov

John Carty  
DOE  
Office of Isotopes for Medicine & Science  
19901 Germantown Road, B-429  
Germantown, MD 20874  
Phone: 301/903-1649  
Fax: 301/903-5434  
john.carty@hq.doe.gov

James Cebe  
NNSA Nevada/WATS  
323 Energy Way, MS505  
North Las Vegas, NV 89030  
Phone: 702/295-0957  
Fax: 702/295-1153  
No email address

Tracy Dunham  
Sandia National Laboratories  
P.O. Box 5800, MS0727  
Albuquerque, NM 87185-0727  
Phone: 505/845-9776  
Fax: 505/844-8719  
tmdunha@sandia.gov

Paul Fuhrman  
INEEL/NMFA  
P.O. Box 1625  
Idaho Falls, ID 83415  
Phone: 208/526-3196  
Fax: 208/526-1234  
fuhrpw@inel.gov

Fred Gardner  
Nuclear Fuel Services, Inc.  
11634 Channing Way  
Farragut, TN 37922  
Phone: 865/675-6853  
Fax: 865/671-2770  
fgardner@chartertn.net

Joel Grimm  
Department of Energy/OSRP  
P.O., Box 5400  
Albuquerque, NM 87185  
Phone: 505/845-5463  
Fax: 505/284-7298  
jgrimm@doeal.gov

Steven Hamp  
DOE/National Transportation Program  
P.O. Box 5400, SC-5  
Albuquerque, NM 87185  
Phone: 505/845-5640  
Fax: 505/845-5508  
shamp@doeal.gov

James Horn  
Isotope Products Laboratories  
24937 Ave. Tibbitts  
Valencia, CA 91355  
Phone: 661/309-1054  
Fax: 661/257-8305  
jhorn@isotopeproducts.com

Greg Hulet  
INEEL/WET  
P.O. Box 1625, MS3875  
Idaho Falls, ID 83401-3118  
Phone: 208/526-0283  
Fax: 208/526-1061  
hag@inel.gov

Brent Ives  
LLNL/NMFA  
P.O. Box 808, L-347  
Livermore, CA 94551  
Phone: 925/423-2635  
Fax: 925/423-1685  
ives1@llnl.gov

Debbie Malone  
LLNL/NMFA  
P.O. Box 808, L-347  
Livermore, CA 94551  
Phone: 925/422-0546  
Fax: 925/423-1685  
malone2@llnl.gov

Kathy McBride  
Bechtel BWXT/NISSMG  
2525 Fremont Avenue, MS 3135  
Idaho Falls, ID 83415-3135  
Phone: 208/526-7557  
Fax: 208/526-5337  
kxm@inel.gov

Mark Mintz  
LLNL/Tritium Recovery & Recycle Program  
P.O. Box 808, L-358  
Livermore, CA 94551  
Phone: 925/422-8394  
Fax: 925/423-1787  
mintz1@llnl.gov

Cathy Ottinger  
Sandia National Laboratories  
P.O. Box 5800, MS 0748  
Albuquerque, NM 87185-0748  
Phone: 505/845-7033  
Fax: 505/844-2829  
caottin@sandia.gov

David Parks  
INEEL/NISSMG  
P.O. Box 1625  
Idaho Falls, ID 83415  
Phone: 208/526-0486  
Fax: 208/526-1234  
dlp@inel.gov

Michael Pearson  
Los Alamos National Laboratory  
P.O. Box 1663, MS J552  
Los Alamos, NM 87545  
Phone: 505/665-0483  
Fax: 505/665-7913  
mwp@lanl.gov

Gary Polansky  
Sandia National Laboratories  
P.O. Box 5800, MS 0727  
Albuquerque, NM 87111  
Phone: 505/845-7029  
Fax: 505/844-8719  
gfpolan@sandia.gov

David Sala  
Sala and Associates, Inc.  
6 Dancing Horse Lane  
Corrales, NM 87048  
Phone: 505/453-6794  
Fax: 505/323-1758  
sala@sprintmail.com

Stephen Schutt  
Nuclear Fuel Services, Inc.  
760 Edencrest Lane  
Suwanne, GA 30024  
Phone: 678/947-4903  
Fax: 678/947-4905  
smschutt@worldnet.att.net

J.D. Smith  
NMFA  
P.O. Box 5800, MS 0718  
Albuquerque, NM 87185-0718  
Phone: 505/844-0531  
Fax: 505/844-8719  
jdsmith@sandia.gov

Whitney St. Michael  
INEEL/WET  
2525 N. Fremont Avenue, MS 3875  
Idaho Falls, ID 83415  
Phone: 208/526-3206  
Fax: 208/526-1061  
whitney@inel.gov

Traci Taul  
BBWI/NISSMG  
2525 Fremont Avenue, MS 3135  
Blackfoot, ID 83221  
Phone: 208/526-3195  
Fax: 208/526-5337  
taultj@aol.com

Amy Taylor  
Department of Energy  
Office of Isotopes for Medicine & Science  
19901 Germantown Road, B426  
Germantown, MD 20874  
Phone: 301/903-7722  
Fax: 301/903-5434  
amy.taylor@hq.doe.gov

Elizabeth Thiel  
INEEL/NMFA  
P.O. Box 1625, MS 3404  
Idaho Falls, ID 83415-3404  
Phone: 208/526-3684  
Fax: 208/526-1234  
ethiel@inel.gov

Judi Wells  
LLNL/NMFA  
P.O. Box 808, L-347  
Livermore, CA 94551  
Phone: 925/423-3370  
Fax: 925/423-1685  
wells11@llnl.gov

Jim Wilson  
Isotope Products Laboratories  
24937 Avenue Tibbits  
Valencia, CA 91355  
Phone: 661/309-1042  
Fax: 661/257-8303  
jwilson@isotopeproducts.com

## DOE

Carl Ahlberg  
Department of Energy, Chicago  
9800 S. Cass Avenue  
Argonne, IL 60439  
Phone: 630/252-2068  
Fax: 630/252-2078  
carl.ahlberg@ch.doe.gov

Theresa Aldridge  
Department of Energy  
Richland Operations Office  
MSIN K8-50  
Richland, WA 99352  
Phone: 509/372-4508  
Fax: 509/372-4037  
theresa\_l\_aldrige@rl.gov

Tony Bindokas  
Department of Energy, Chicago  
9800 S. Cass Avenue, DOE-CH/PMO  
Argonne, IL 60439  
Phone: 630/252-2692  
Fax: 630/252-2654  
antanas.bindokas@ch.doe.gov

Scott Boeke  
Department of Energy, Savannah River  
P.O. Box A  
Aiken, SC 29802  
Phone: 803/952-3554  
Fax: 803/952-2495  
scott.boeke@srs.gov

Angela Colarusso  
NNSA/NV  
232 Energy Way, WMD/MS  
North Las Vegas, NV 89030  
Phone: 702/295-1218  
Fax: 702/295-1153  
colarusso@nv.doe.gov

Sue Countiss  
Department of Energy, CBFO  
P.O. Box 5400  
Albuquerque, NM 87185  
Phone: 505/234-7432  
Fax: 505/234-7061  
sue.countiss@wipp.ws

Lisa Dancy  
Department of Energy, Oakland  
1301 Clay Street  
Oakland, CA 94622  
Phone: 925/423-4078  
Fax: 925/424-3212  
lisa.dancy@oakdoe.gov

Brian Jenks  
Department of Energy, Albuquerque  
P.O., Box 5400, TDD/SPB  
Albuquerque, NM 87185  
Phone: 505/845-4959  
Fax: 505/845-5960  
bjenks@doeal.gov

Jeff Lenhart  
Department of Energy, Albuquerque  
P.O. Box 5400  
Albuquerque, NM 87185  
Phone: 505/845-5202  
Fax: 505/845-4883  
jlenhart@doeal.gov

John Loomis, Jr.  
Department of Energy, ANL-E  
9800 S. Cass Avenue  
Argonne, IL 60439  
Phone: 630/252-1562  
Fax: 630/252-2750  
john.loomis@ch.doe.gov

James Low  
Department of Energy, Albuquerque  
P.O. Box 5400, NMSPO  
Albuquerque, NM 87185  
Phone: 505/845-5458  
Fax: 505/284-7227  
jlow@doeal.gov

Ramoncita Massey  
Department of Energy, Albuquerque  
P.O. Box 5400  
Albuquerque, NM 87115  
Phone: 505/845/4675  
Fax: 505/845-5960  
rmassey@doeal.gov

Joanne Norton  
NNSA/NV  
232 Energy Way  
North Las Vegas, NV 89030  
Phone: 702/295-0272  
Fax: 702/295-1153  
nortonj@nv.doe.gov

Kenny Osborne  
Department of Energy, Idaho  
850 Energy Drive, MS1225  
Idaho Falls, ID 83402  
Phone: 208/526-0805  
Fax: 208/526-5964  
osbornkk@id.doe.gov

Gary Roberson  
Department of Energy, Albuquerque  
P.O. Box 5400, NMSPO  
Albuquerque, NM 87185  
Phone: 505/845-5805  
Fax: 505/845-5872  
groberson@doeal.gov

Ray Schwartz  
Department of Energy, Office of Science  
19901 Germantown Road  
Germantown, MD 89801  
Phone: 301/903-4909  
Fax: 301/903-7047  
ray.schwartz@science.doe.gov

Harish Sharma  
Department of Energy, Albuquerque  
P.O. Box 5400  
Albuquerque, NM 87185-5400  
Phone: 505/845-4275  
Fax: 505/845-4216  
hsharma@doeal.gov

Ralph Smiecinski  
Department of Energy, Nevada  
232 Energy Way, MS 505  
North Las Vegas, NV 89030  
Phone: 702/295-0606  
Fax: 702/295-1810  
smiecinski@nv.doe.gov

Jack Tillman  
Department of Energy, Albuquerque  
P.O. Box 5400, NMSPO  
Albuquerque, NM 87185  
Phone: 505/845-4114  
Fax: 505/284-5439  
jtillman@doeal.gov

Paul Tilman  
NNSA/NV  
232 Energy Way, MS 505  
North Las Vegas, NV 89030  
Phone: 702/295-0934  
Fax: 702/295-1153  
tilman@nv.doe.gov

John Tseng  
Department of Energy, FM30  
19901 Germantown Road  
Germantown, MD 20874  
Phone: 301/903-4482  
Fax: 301/903-5084  
john.tseng@em.doe.gov

# **Presentations by Service Providers**



# *Nonactinide Isotopes and Sealed Sources Management Group*

*James O. Low  
DOE Albuquerque Operations Office*

*April 23-25, 2002  
Small Sites Materials Issues Support Workshop  
Las Vegas, Nevada*



# ***What are NISS Nuclear Materials?***

---

- **Nonactinide Isotope and Sealed Source (NISS) materials are excess materials other than plutonium, uranium, and spent nuclear fuel. NISS materials include:**
  - All radioactive isotopes of elements with atomic numbers less than 90 regardless of form.
  - Other manmade isotopes in the form of sealed sources, standards, and research materials, and special categories, such as radioisotope thermoelectric generators (RTGs), pacemakers, and neutron sources.
- **A spectrum of orphan isotopes and activated materials at small sites, regardless of isotope, are also within the NISS work scope.**



# *Mission*

- **The Nonactinide Isotope and Sealed Sources Management Group (NISSMG) enhances the effective management of NISS materials by:**
  - Providing direct support to closure sites and facilities to ensure timely shipment of their NISS materials to reduce costs and accelerate schedules
  - Developing an effective mechanism for reuse and recycle of NISS materials to implement DOE's pollution prevention strategies
  - Eliminating excess inventories of NISS materials to enhance worker and public safety by reducing the potential for loss of control of these materials
  - Sharing knowledge and developing procedures for common NISS materials activities to reduce the costs of managing these materials
- **The NISSMG priorities are to first serve closure sites, then closure facilities, then other DOE sites.**



# ***NISSMG***

- **One of five EM sponsored Nuclear Materials Management Groups**
  - Pu (Plutonium)
  - U (Uranium)
  - HI (Heavy Isotopes)
  - SNF (Spent Nuclear Fuel)
  - NISS (Nonactinide Isotopes and Sealed Sources)
- **Integral component of the Nuclear Materials Disposition Program**
- **Endorsed by DOE and NNSA senior management**



# NISSMG Technical Resources

- NISSMG is recognized as a technical resource for the effective management of surplus sealed radioactive sources and nuclear material
- Expertise to assist site in disposition planning options, establish technical baselines and resolve implementation issues
- Supports reuse of sealed sources by other programs and other sites.
- NISSMG assisted Mound to de-inventory all major surplus nuclear materials

United States Government

Department of Energy

## memorandum

DATE: February 14, 2002

REPLY TO  
ATTN OF: EM-21 (John Tseng, 301-903-4482)


SUBJECT: Technical resources for disposition planning of surplus sealed radioactive sources


to: Distribution

The purpose of this memorandum is to inform you of a capability sponsored by the Office of Environmental Management (EM) to assist sites to inventory, characterize, and plan for the disposition of surplus nuclear materials, including surplus sealed radioactive sources. The Non-actinide Isotopes and Sealed Sources Management Group (NISSMG), established at the Albuquerque Operations Office, has the appropriate expertise to assist sites to study disposition options for surplus non-actinide isotopes and sealed radioactive sources. For example, reuse of sealed sources by other programs or at other sites is possible but often overlooked. Frequently, we have been able to avoid costly disposal activities by recycling or reusing the sealed source.

The NISSMG, has been successful in recent years in assisting sites to inventory and characterize surplus nuclear materials, offering technical recommendations and providing implementation assistance. For example, the NISSMG worked with experts from the Oak Ridge National Laboratory (ORNL) to assist Mound in transporting Iodine ( $^{131}\text{I}$ ) ampoules to ORNL for recovery of the valuable radioisotope protactinium ( $^{231}\text{Pa}$ ) for research, resulting in a savings of approximately \$200K for Mound. NISSMG was successful in assisting Mound to de-inventory all major inventory of surplus nuclear materials. NISSMG has also provided recommendations to all EM closure sites. Working with experts from ORNL, they have also provided de-inventorying assistance to the Lawrence Berkeley National Laboratory and the Lawrence Livermore National Laboratory.

If you are interested in assistance by NISSMG to develop a disposition strategy for your sealed sources, please contact Mr. David G. Huizenga at (202) 586-5151.

  
Robert G. Card  
Under Secretary for  
Energy, Science, and Environment

  
John Gordon  
Under Secretary for Nuclear Security



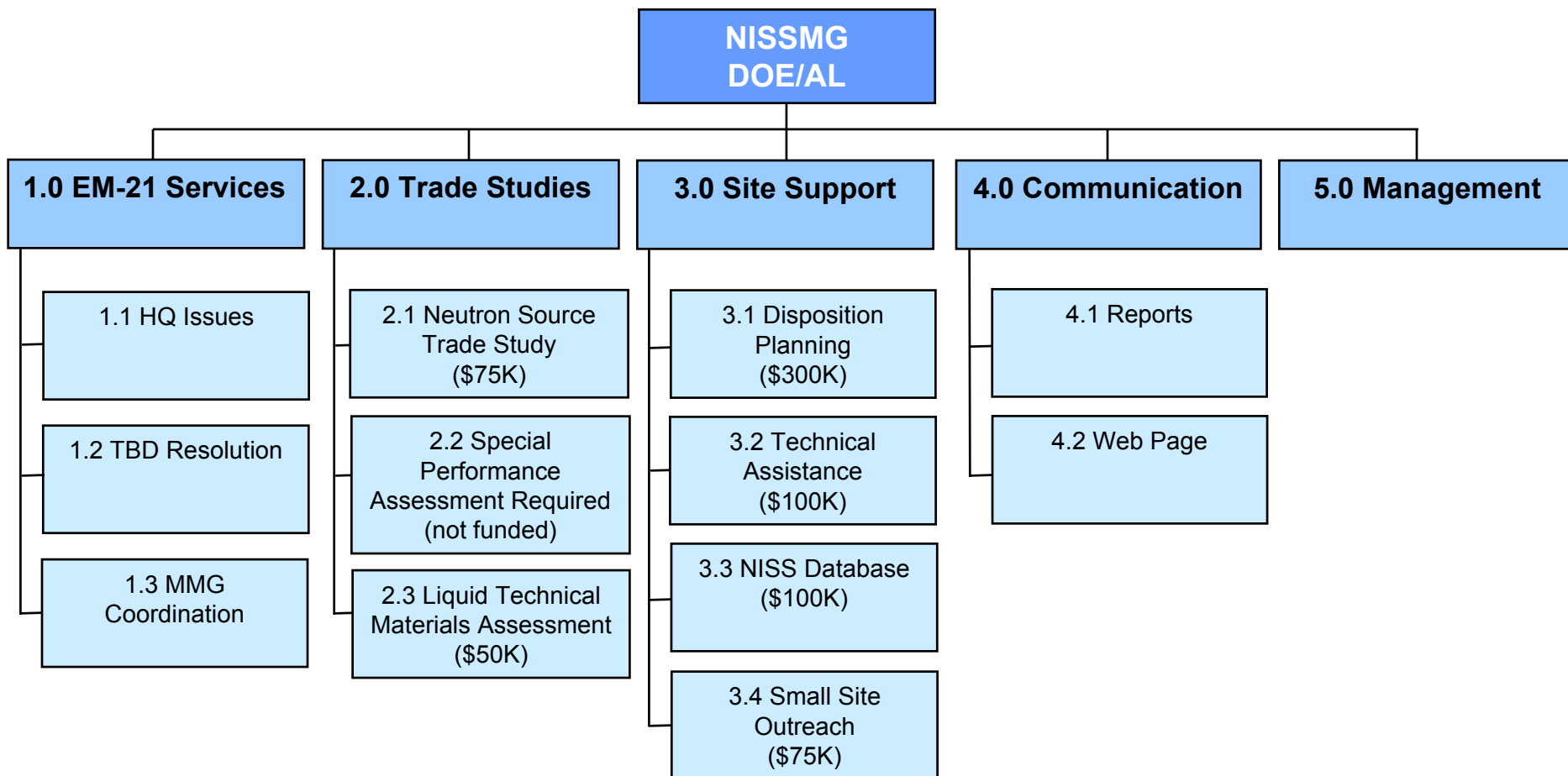
# ***NISSMG***

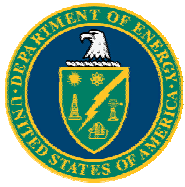
## **The NISSMG supports key EM goals and priorities:**

- 1. Improve Safety Performance** - Reducing excess material inventories increases worker safety and reduces risk to the public.
- 2. Reduce the Cost and Time Required to Complete the EM Mission** - Provide direct support to HQ and the sites to develop disposition alternatives and technical baselines. Continue to provide technical assistance during baseline implementation.
- 3. Close Rocky Flats, Fernald, and Mound by 2006** - Completed de-inventory of Mound. Actively working Rocky Flats and Fernald. Proactive outreach to address small site issues.
- 4. Consolidate Nuclear Material out of EM sites by 2004** - Mound experience demonstrates capability to provide innovative solutions for site transportation issues. Small site initiative provides additional opportunities for nuclear material consolidation.
- 5. Shrink the EM Footprint** - Nuclear material removal is critical path to subsequent D&D and environmental restoration. NISS materials are often neglected in early planning.



# *Work Breakdown Structure*



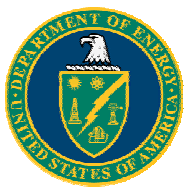


# ***NISSMG***

## ***Direct Technical Site Support***

---

- **RFETS** - Orphan material disposition planning, bulk characterization, reuse\*, Pu standards support\*
- **Fernald** - Orphan material management and disposition planning, GUPKA demonstration, and calcine transfer expertise sharing\*
- **Ashtabula** - Material management and disposition planning
- **K-25/ETTP** - HFIR internals assessment, RTG's, reuse option for large Pu-238 sources at SRS\*
- **LLNL** - Material disposition planning and technical support for de-inventory of Building 251\*
- **SRS** - Transportation package identification and reactivation for Pu standards for recertification shipments\*
- **Albany, Oregon** - Nuclear material disposition planning



# ***NISSMG***

## ***Direct Technical Site Support***

---

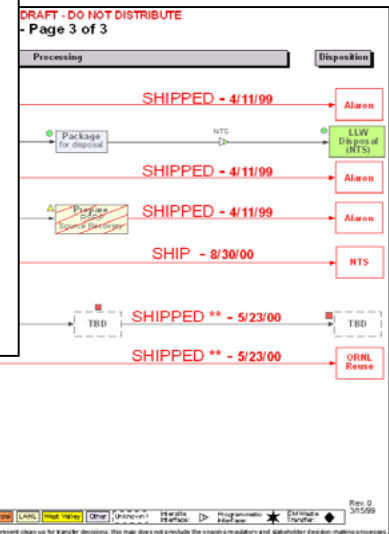
- **Mound** - Completed de-inventory of site
- **LANL** - Site nuclear material disposition planning\*
- **Sandia** - Site nuclear material disposition planning\*
- **Battelle Columbus** - Pu disposition
- **ORNL** - Be reflectors assessment
- **PNNL** - Material management and disposition planning, CFX reactor material disposition
- **Pantex** - Irradiator transportation technical support
- **Brookhaven** - Interim storage options development for neutron source
- **INEEL** - Be reflector assessment, DU shielding



# *Case Study - Closure Site Support - Mound*

- Started April 1998 on an as requested basis
- Developed a material management plan in which ORNL separated protactinium, a unique isotope, from Mound Ionium
- Facilitated demonstration (no-cost) mobile material characterization - Mound CFX Reactor cadmium moderator blades
- Defined and brokered a material management strategy that enabled ORNL to reuse Pu-238 from problematic neutron sources
- Developed the technical basis to permit the shipment of the last major nuclear materials from the Mound site, facilitating site closure





NISSMG supported  
9 of 22 material streams  
at Mound (40%).

At the Mound Plant, all nuclear materials have been dispositioned, reducing the mortgage costs in security, safeguards, and personnel.



# *NISSMG Success at Mound*

- **NISSMG developed a technical basis to ship Mound plutonium materials in existing shipping containers by commercial transport**
- **“...thank you for the outstanding service provided by your NISSMG...”**
- **“... removed the last major excess nuclear materials from our site and was a significant milestone towards the closure of the Mound Facility.”**



BWXT Technologies, Inc.  
a McDermott company

BWXT of Ohio, Inc.

1 Mound Road  
P.O. Box 3030  
Miamisburg, Ohio 45343-3030  
(937) 865-4020

Mr. James O. Low  
Nuclear Materials Stewardship Project Office  
U. S. Department of Energy  
Albuquerque Operations Office  
P. O. Box 5400  
Albuquerque, NM 87115

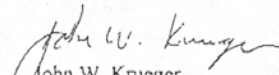
WM-073/00  
November 30, 2000

SUBJECT: Contract No. DE-AC24-97OH20044  
**ACKNOWLEDGEMENT OF TECHNICAL ASSISTANCE  
FROM SANDIA NATIONAL LABORATORIES**

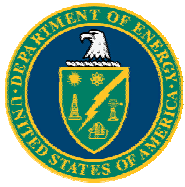
Dear Mr. Low:

BWXT of Ohio would like to thank you for the outstanding service provided by your Nonactinide Isotope and Sealed Sources Management Group (NISSMG) on our recent shipment of plutonium materials from the Mound Plant to the Savannah River Site. The Sandia National Laboratories team of Gary Polansky, Cathy Ottinger, and Larry Sanchez, worked diligently to find a solution that both satisfied current regulatory requirements and could be implemented within the limited remaining infrastructure at our site. Their ability to achieve this goal within our limited time constraints speaks well for the capabilities of the NISSMG. This shipment removed the last major excess nuclear materials from our site and was a significant milestone towards the closure of the Mound Facility.

Sincerely,

  
John W. Krueger  
Project Manager, ER/WM

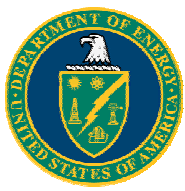
cc: Richard Provencher, DOE/MEMP  
Robert Rothman, DOE/MEMP  
Peyton Baker, BWXT  
Raymond Finney, BWXT  
DCC



# ***Case Study - Facility Closure - LLNL***

---

- **LLNL requested that the NISSMG review the Building 251 materials inventory**
- **Review performed in conjunction with the Heavy Isotopes Management Group and LLNL staff**
- **Findings documented in October 2001 report:**
  - Viable disposition paths were identified for 95% of the items
  - Reuse options identified for 65% of the items
  - Rare and valuable isotopes were identified that should be returned to beneficial use in the complex
  - A cost savings potential of ~\$5M was documented based on accelerating the removal of nuclear materials from the facility
- **Findings endorsed by DNFSB staff (reference: personal communication with Timothy L. Hunt)**



## *Case Study - LLNL - Milestone*

- **As a first step in the implementation of the Building 251 Materials Management and Disposition Plan, technicians removed 7 items for the Building 351 safes for repackaging and transfer to another location on the LLNL site on October 25, 2001.**
- **This action was the first to reduce the Building 251 inventory since the facility was placed in Program Standby Mode in 1995.**
- **The NISSMG is providing continuing technical assistance during the de-inventory of this facility.**





# *NISSMG Recognition from LLNL*

- **“The manner in which NISSMG collaborated with staff...to produce the plan very quickly...is exemplary.”**
- **“The NISSMG materials management and disposition plan has been adopted by LLNL as the baseline for Building 251....”**
- **“Your continued assistance and support on technical issues associated with implementation of this plan has been greatly appreciated.”**



Lawrence Livermore National Laboratory



*Safety, Security and  
Environmental Protection Directorate*

March 11, 2002

James O. Low  
Acting Manager Nuclear Material Steward Program Office (NMSPO)  
U.S. Department of Energy  
Albuquerque Operations Office  
Albuquerque, NM 87185

Subject: **Memorandum of Appreciation**

Dear Mr. Low:

I would like to express my appreciation for the effort you and the Nonactinide Isotope and Sealed Source Management Group (NISSMG) expended developing the Nuclear Material Management and Disposition Plan (October 2001) for the Heavy Isotope Facility (Building 251) at the Lawrence Livermore National Laboratory (LLNL). The manner in which NISSMG collaborated with staff at LLNL to produce the plan very quickly after LLNL requested assistance last Spring is exemplary. Most notable is that the plan provides a realistic disposition paths for more than 95% of the Building 251 inventory and identifies reuse or recycle options for over two thirds of the items. The NISSMG report also provided valuable insights into cost-effective management of Building 251 materials by showing that accelerating disposition of materials from the Building 251 has the potential to save more than \$5M over the baseline plan.

The NISSMG materials management and disposition plan has been adopted by LLNL as the baseline for Building 251 materials and LLNL is now moving aggressively to disposition its Building 251 inventory. Your continued assistance and support on technical issues associated with implementation of this plan has been greatly appreciated. We look forward to working with you in the future.

Sincerely,

*Dennis K. Fisher*  
Dennis K. Fisher  
Associate Director

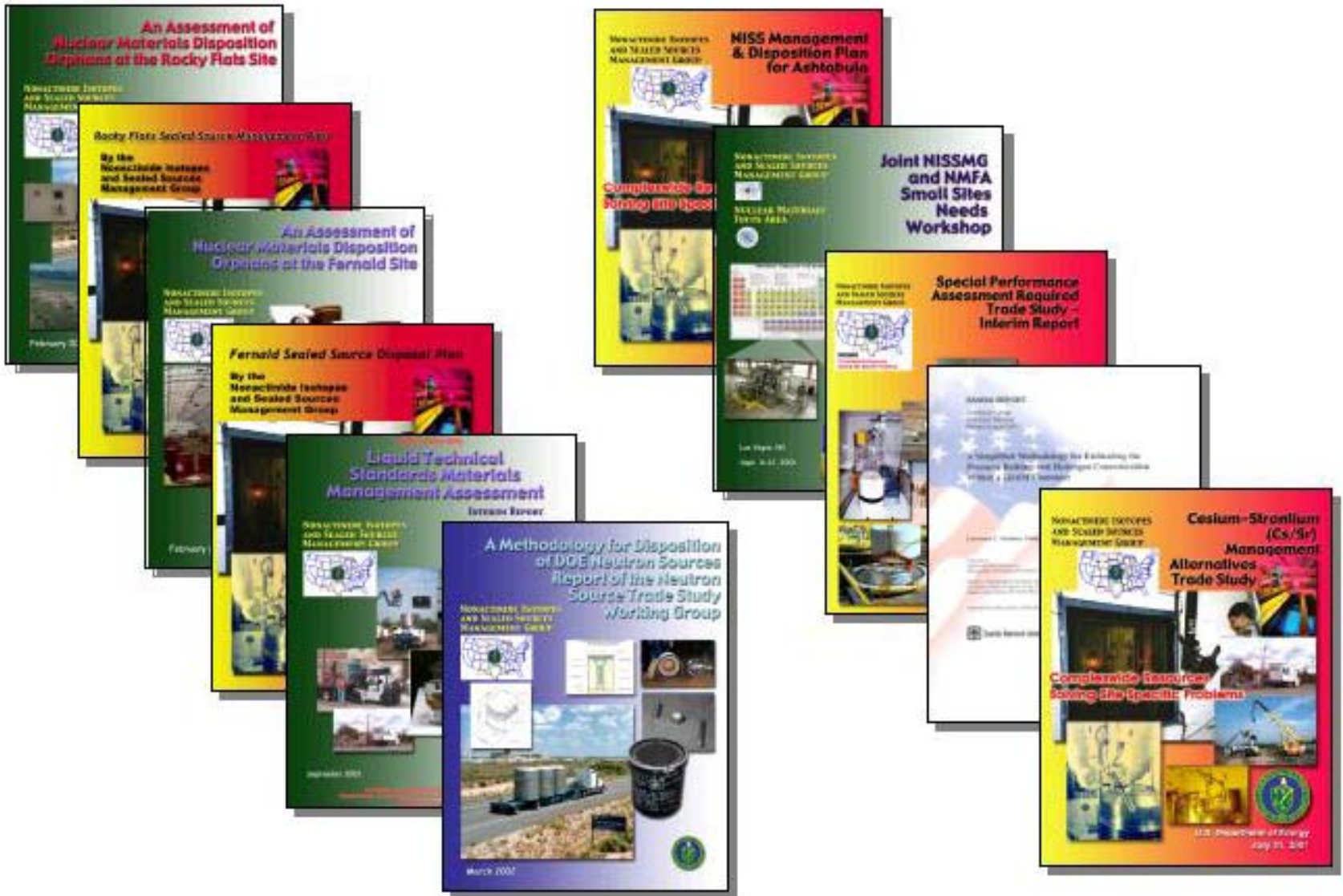
Copy: Boardman, Karen (DOE/AL)  
Disabatino, Al  
Galles, Harry  
Hauber, Janet  
Miotla, Dennis (DOE/NNSA)

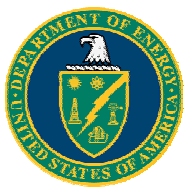
DKF:  
B251-02-005

An Equal Opportunity Employer • University of California • P.O. Box 808, L-005, Livermore, California 94550  
(925) 422-3343 - Fax (925) 424-2415



# *NISSMG Products*



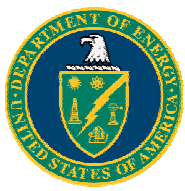


# ***NISSMG***

## ***Small Sites Services***

---

- **Material Management & Disposition Planning**
  - Develop baseline alternatives
  - Develop Disposition Plan with identified disposition paths, characterization, processing, packaging, end state
  - Identify unique materials and reuse opportunities
  - Orphan material and TBD disposition map resolution
  - Receiver site identification and coordination
- **Material Management & Disposition Technical Assistance**
  - Stabilization technology assistance
  - Transportation technical support
  - WAC and disposal site technical assistance
- **Analyzing, optimizing and implementing cost effective alternatives, including commercial vendors, for specific NISS materials issues.**



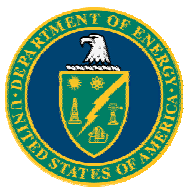
# *NISSMG*

## *Small Sites Services*

---

### **NISS Data Integration**

- **Virtual Source Bank** - WEB based tool to facilitate reuse by making excess DOE sealed source information available to potential users, Virtual Source Bank link:  
<http://emi-web.inel.gov/Nissmg/index.htm>
- **Centralized NISS Database** - Current database exceeds 42,000 sources from 46 sites across the complex
  - Sites - contact us to identify excess sources and provide your current updated inventories
  - Batch upload process currently enables sites to transmit data.
- **Complex Wide Issue Identification** – Use centralized database to identify crosscutting issues for the DOE complex



# *NISSMG*

## *Small Sites Services*

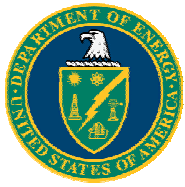
---

- **Small Sites Workshop**

- NISSMG co-sponsors the Small Sites Workshops with the Nuclear Materials Focus Area
- First workshop held September 11-13, 2001 with 48 participants representing 19 sites and 7 service providers
- Current workshop registrations exceed 60

- **Current Trade Studies**

- Liquid Technical Materials Assessment: Contact us with inventory information for inclusion in this on-going study
- Neutron Source Trade Study: This study is complete and will be released in the next two weeks.
- Cesium/Strontium Trade Study: Initial study being amended to include new options
- Special Performance Assessment Required Study: Phase I complete, potential collaboration with NVO for Phase II



# *Conclusion*

---

## Complex-Wide Resources Solving Site Specific Problems

**How can we help you?**

**Jim Low (DOE/AL) (505) 845-5458 jlow@doeal.gov**

**Gary Polansky (Sandia) (505) 845-7029 gfpolan@sandia.gov**

**Dave Parks (INEEL) (208) 526-0486 dlp@inel.gov**

**Jeff Allender (SRS) (803) 725-4187 jeff.allender@srs.gov**

**<http://emi-web.inel.gov/Nissmg/index.htm>**

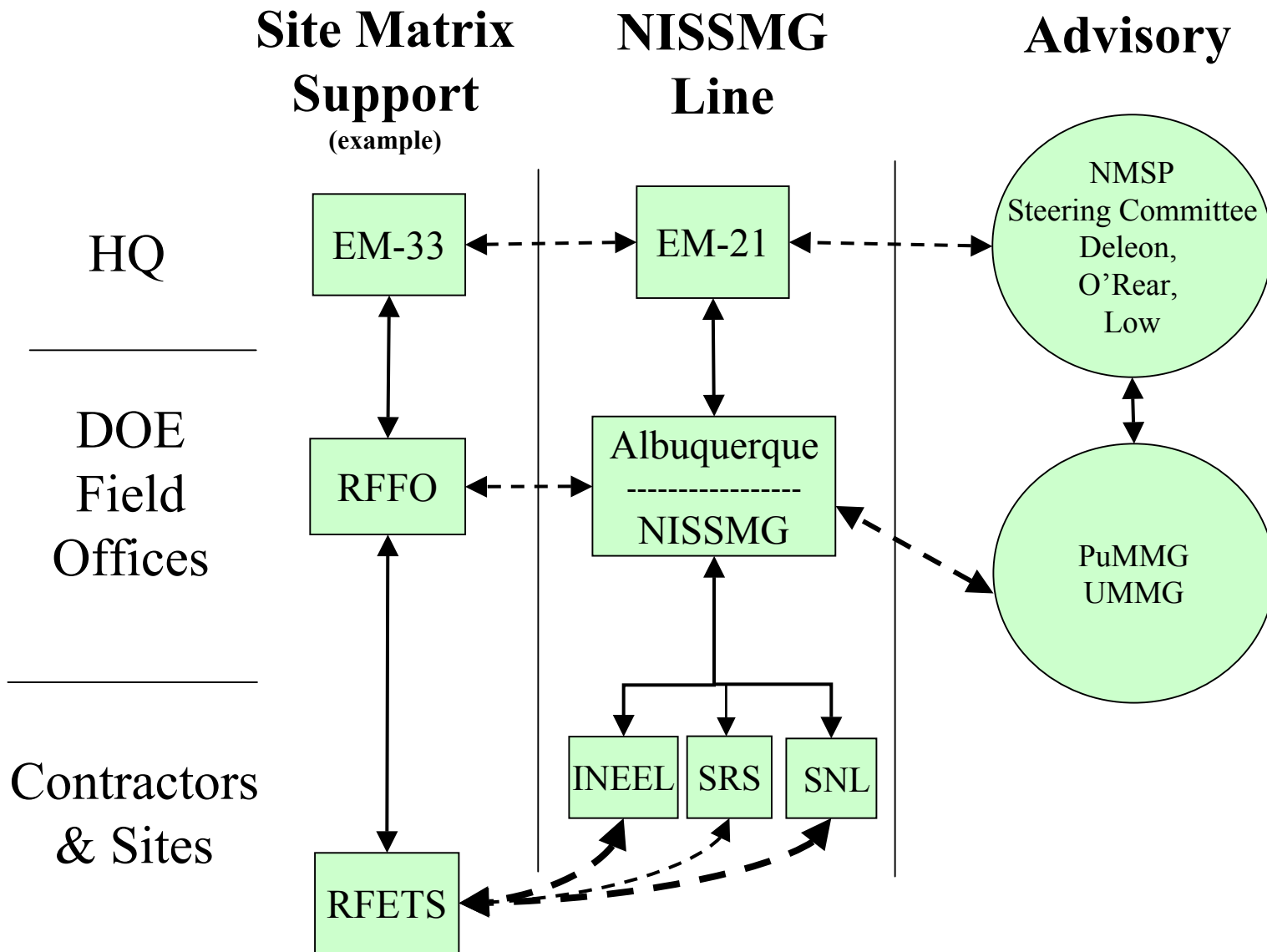


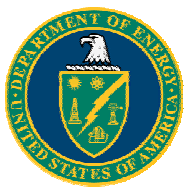
# *Backup*



# NISSMG

## Organizational Structure for Matrix Support





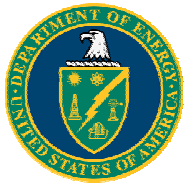
# *NISSMG*

## *Other Small Sites Services*

---

**We enhance effective small sites nuclear materials management by:**

- Providing technical support to sites for NISS materials issues
- Developing/maintaining “toolbox” of NISS material management options
- Conducting trade studies on crosscutting issues to fill “toolbox” to assist sites
  - Liquid Technical Materials
  - Neutron Sources
  - Special Performance Assessment Required materials
  - Cs/Sr
  - Be Reflectors
- Liaison with complex-wide experts and resources to resolve specific NISS materials issues



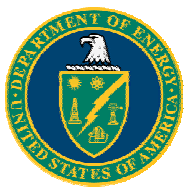
# ***NISSMG***

## ***Other Small Sites Services***

---

**We enhance complex-wide communications with:**

- Annual reports
- Web page - <http://emi-web.inel.gov/Nissmg/index.htm>
  - Charter and Organization
  - Services and Documents
  - Contact information
  - Virtual Source Bank
- Material Management Plan
- Conference papers
- Other reports



# *NISSMG*

## *Other Small Sites Services*

---

- Ensuring effective communications to HQ, other management groups, sites, and the R&D (NMFA) community
- Providing technical and regulatory assistance to ensure effective implementation of recommended solutions



# ***Nuclear Materials Focus Area Small Sites Workshop***

**GD Roberson**

**DOE/AL**

**April 23-24, 2002**





# *Workshop Overview*

---



- Introductions
- Review Agenda
- NMFA Program And Transition
- Workshop
  - Objectives / Process
  - Nuclear Materials Streams
  - Site Break-Out Sessions
  - Recapitulation /Action Item Assignment
- Closing Remarks



# *Workshop Goals / Process*

---

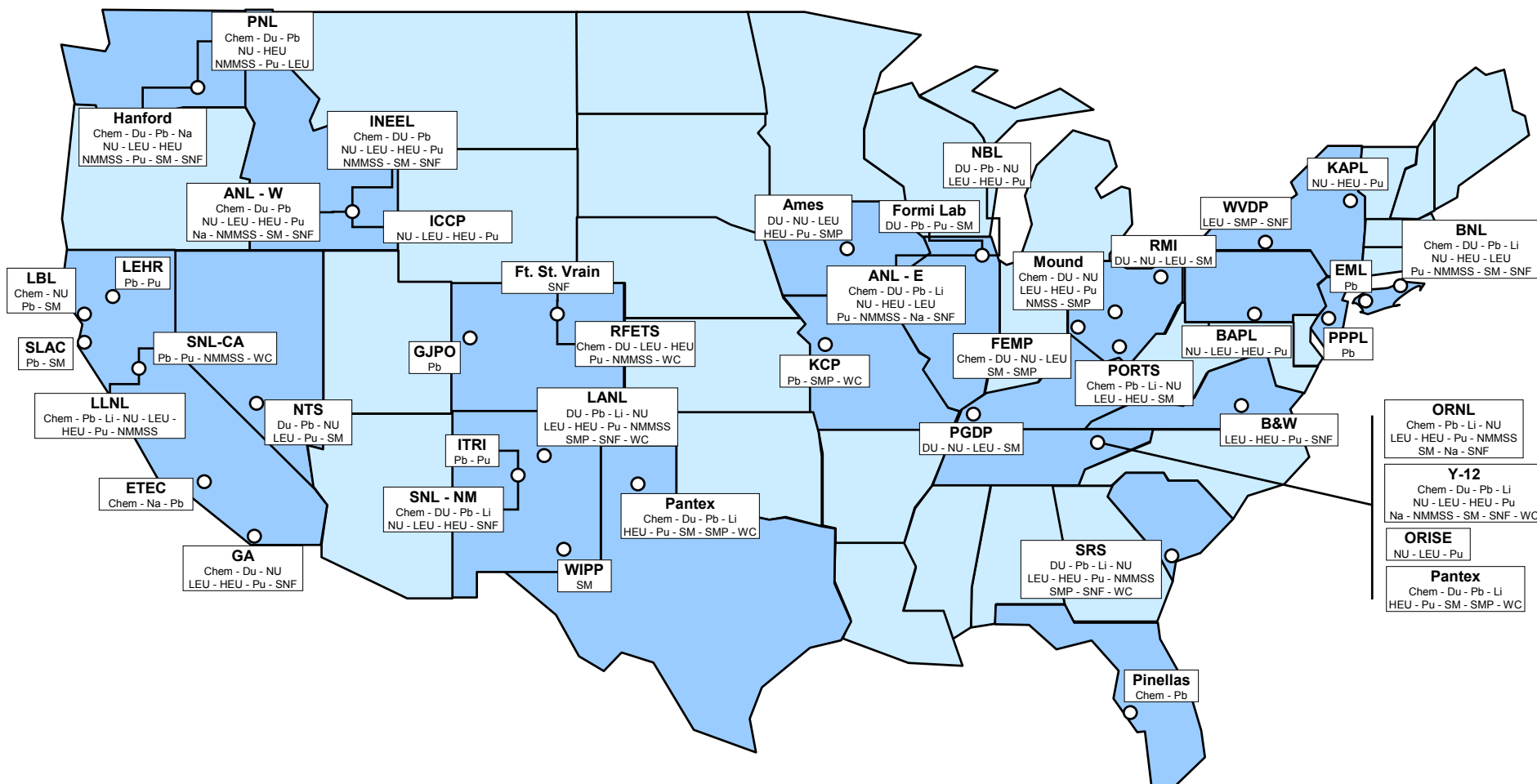


- Objective: Identify and document Science/Technology needs of small sites
- Process:
  - Review nuclear material streams for science/technology gaps
  - Overlay needs from other sites and correlate problem/solution sets
  - Identify critical path for technology development by material stream on individual site basis



# DOE Nuclear Material Legacy

*More than 800 million kilograms of materials, including spent nuclear fuel, at 44 sites in 19 states*



Source: *Taking Stock: A Look at the Opportunities and Challenges Posed by Inventories from the Cold War Era*, DOE/EM-0275, January 1996



# Excess Nuclear Materials Constituents



~ 3/4 million metric tons at 44 sites in 19 states

<u>Nuclear Material</u>	<u>Quantity</u>
• Natural U @ 23 sites	1,000 MT
• Pu @ 8 sites	(up to) 100 MT
• Excess HEU @ 10 sites	174 MT
• LEU @ 28 sites	4,700 MT
• Depleted U @ 34 sites	760,000 MT
• U <sup>233</sup> @ 21 sites	1.9 MT
• Surplus Th @ 19 sites	100 MT
• Spent Nuclear Fuel @ 4 sites	2,500 MT
• Additional quantities Pu <sup>238</sup> , Np <sup>237</sup>	Classified
• Other Isotopes (Am, Cm, Bk, Cf, Cs, Sr)	Lesser Quantities

## Sources:

“A Strategic Approach to Integrating the Long-term Management of Nuclear Materials,” DOE’s Integrated Nuclear Materials Management Plan, 3/31/2000

“Master Material Management Plan, A Complex Wide Strategy for Consolidation and Disposition of Excess Nuclear Materials,” EM-NMSPO - 98-01



# NMFA Mission



- Develop and deploy technology for safe and cost-effective excess nuclear materials management:
  - Identifying science and technology needs
    - Site Technology Coordinating Groups
    - Project Baseline Summary managers
  - Identifying integration opportunities
  - Maintaining nuclear material science and technology core competencies
  - Managing projects to develop, demonstrate and deploy technology solutions for nuclear materials
  - Leveraging Focus Area investments with site contributions to accelerate technology development and deployment
  - Fostering economies of scale through multi-site deployments

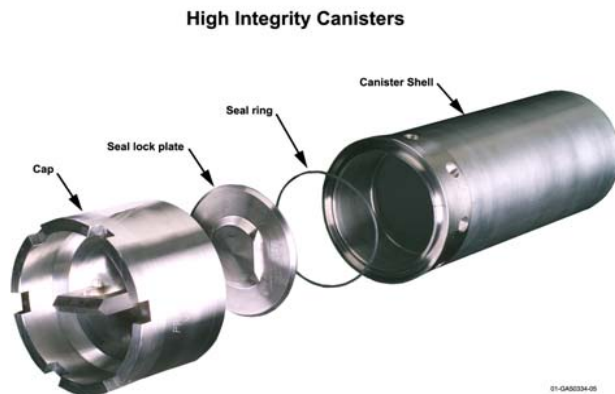
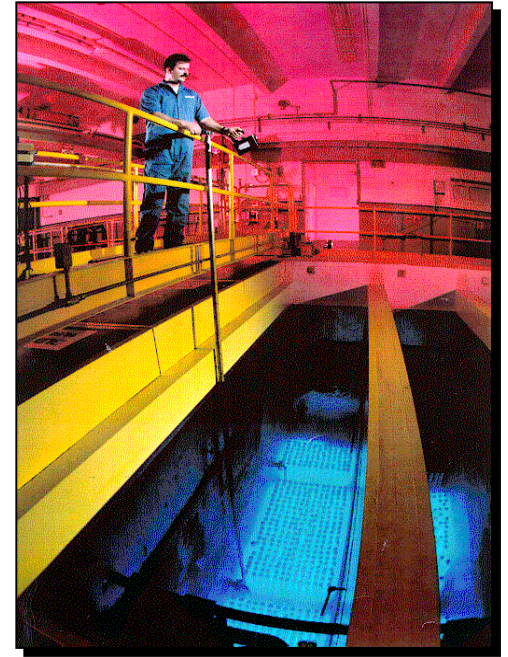




# Scope of NMFA

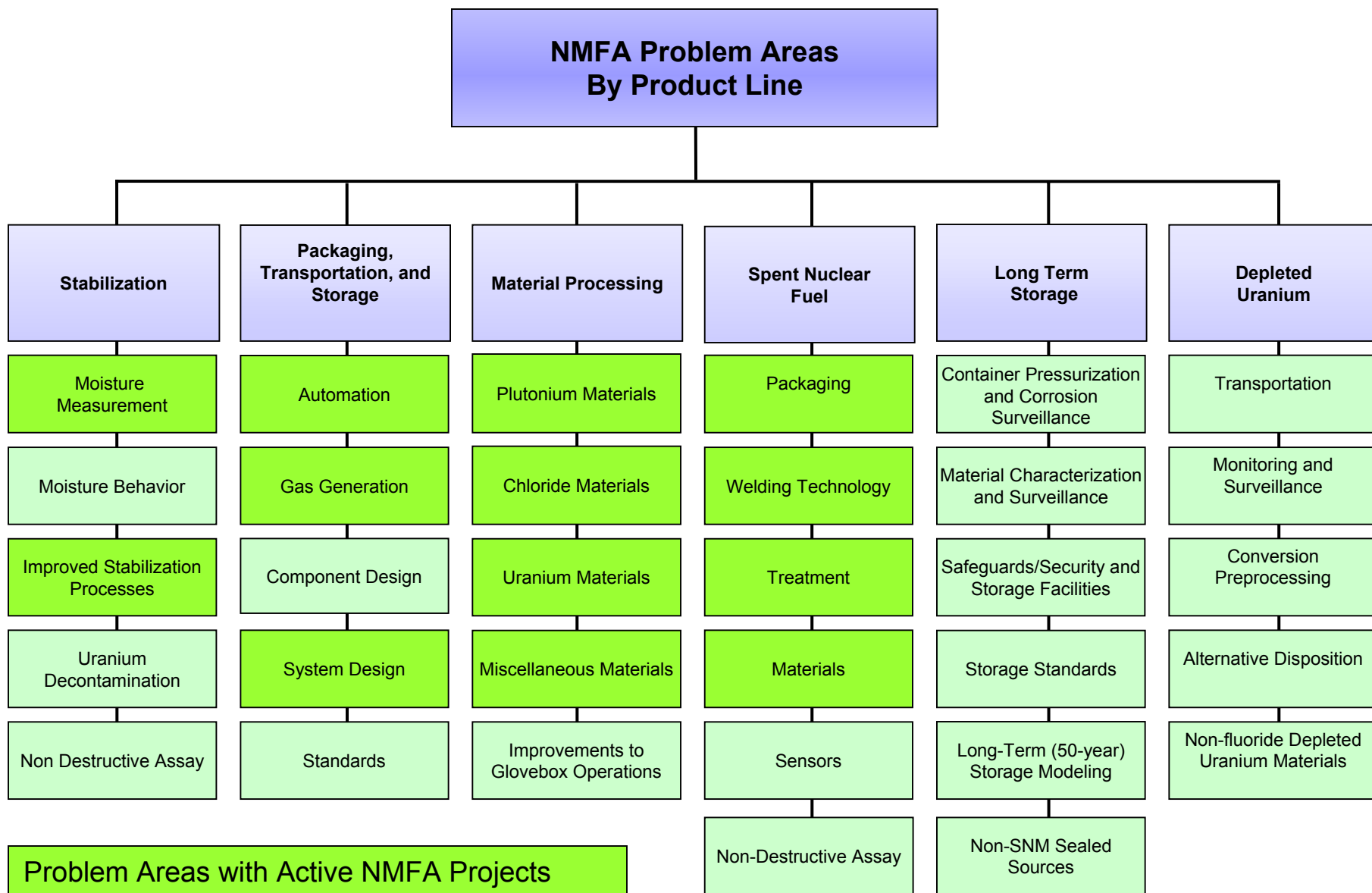


- Excess nuclear materials anticipated to be transferred to EM by 2015
- Specific nuclear materials addressed by NMFA include:
  - Transuranic isotopes (Pu, Np, Pa, Cm, Am)
  - Uranium ( $^{233}\text{U}$ , DU, NU, LEU, HEU) and Thorium
  - DOE-owned SNF
  - Isotope materials and sealed sources (Cr, Pr, Ac, Sr, Cs, Pu-Be, Am-Be, Ra, and Co)





# NMFA Problem Areas

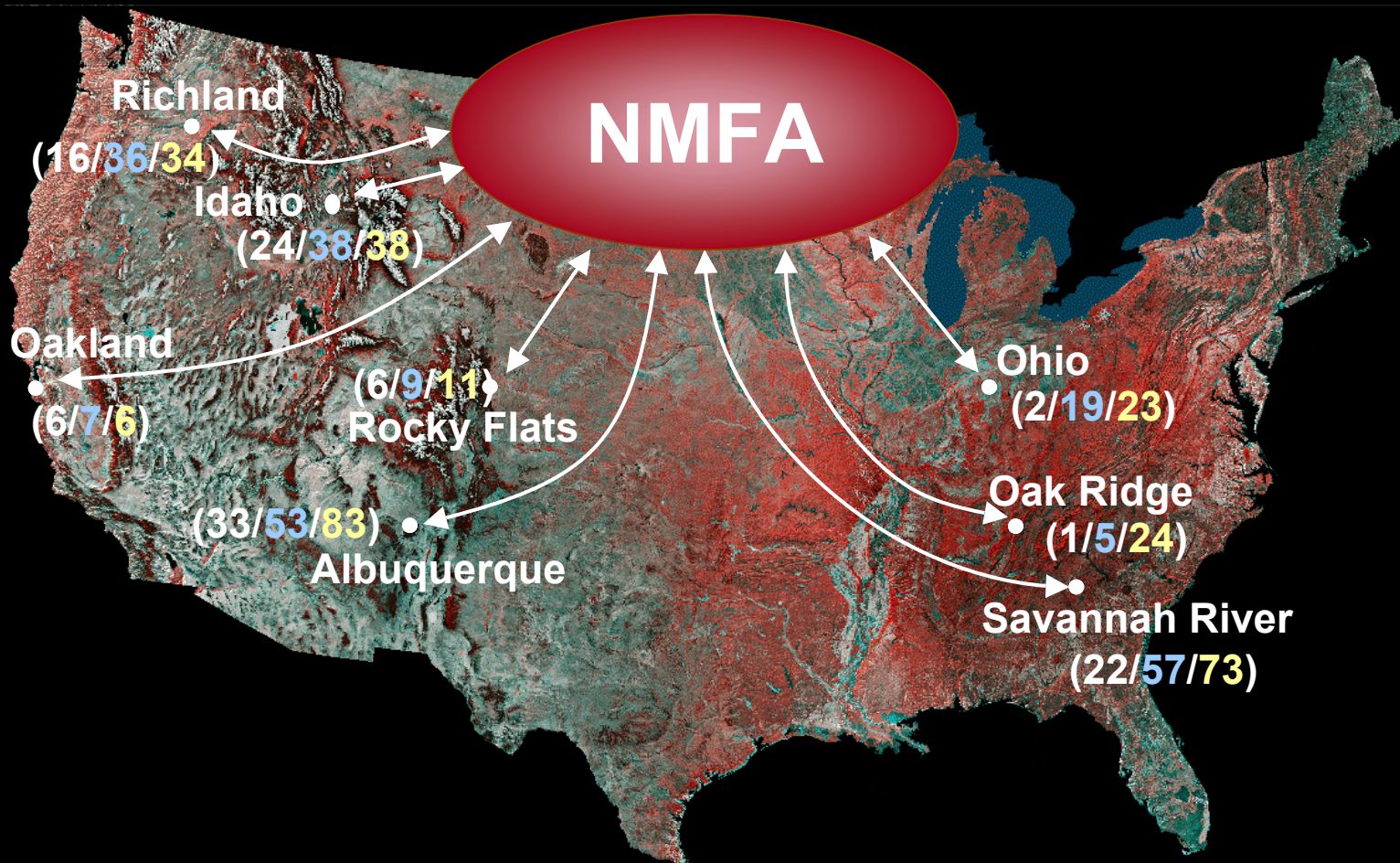




# *NM and SNF Needs Identified*



**109 FY01 Site Needs Identified**  
**224 FY02 Site Needs Identified**  
**292 FY03 Site Needs Identified**





# ***NMFA FY02 Focus***

---

- **Site Needs** – Identified in FY00, refined in FY01
- **Site Prioritization** – Approved by EUSC, HQ Programs
- **Site Closure**
  - **Rocky Flats:** Moisture measurement, gas generation, technical assistance, ASTD
  - **Fernald:** ASTD, robotics, material blending
- **Spent Nuclear Fuel**
  - **INEEL:** HIC, automated welding, corrosion studies
  - **Hanford:** Contributor to above studies
  - **SRS:** Contributor to above studies
- **EM-50 Transition** – Alignment with 2 Thrust areas



# *EM Key Goals and Priorities*



- Improve Safety Performance\*
- Reduce cost and time to complete EM cleanup mission\*
- Close Rocky Flats, Fernald and Mound by 2006\*
- Consolidate Nuclear material out of EM Sites by 2004\*
  - Secretary Abraham on FY2003 DOE Budget Plan: “...incorporates DOE Homeland Security Strategy which is to significantly accelerate the consolidation of nuclear material and waste into more secure locations and configurations...”
- Eliminate Need to Process High Level Liquid Wastes
- Make EM a better customer
- Shrink the EM footprint\*
- Get wastes to disposal facilities quickly
- Reshape EM systems and infrastructure to accelerate cleanup and closure

\*supported by NMFA projects and proposals



# *Transition*



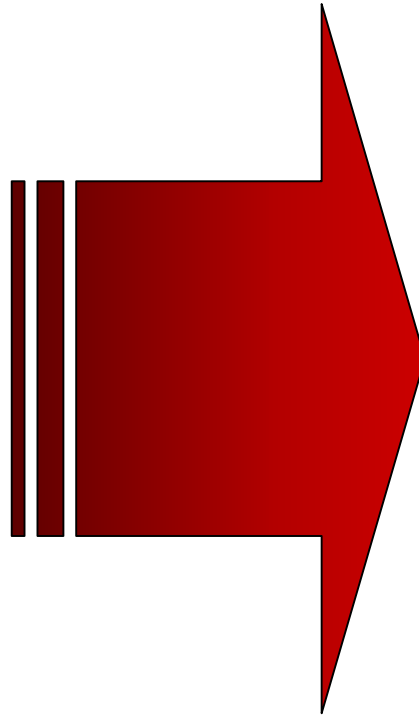
## **FY02**

Stabilization

Packaging  
Transportation  
& Storage

Materials  
Processing

Spent  
Nuclear Fuel



## **FY03**

Thrust I  
Closure Site

Thrust II  
Alternatives

Priorities & Key  
EM Goals



# Conceptual FY03 Organization



## Thrust I

Technical Assistance

Closure Projects

- Technical Experts
- Management Expertise
- Integration

## Thrust II

Stabilization and Transportation of Plutonium Materials

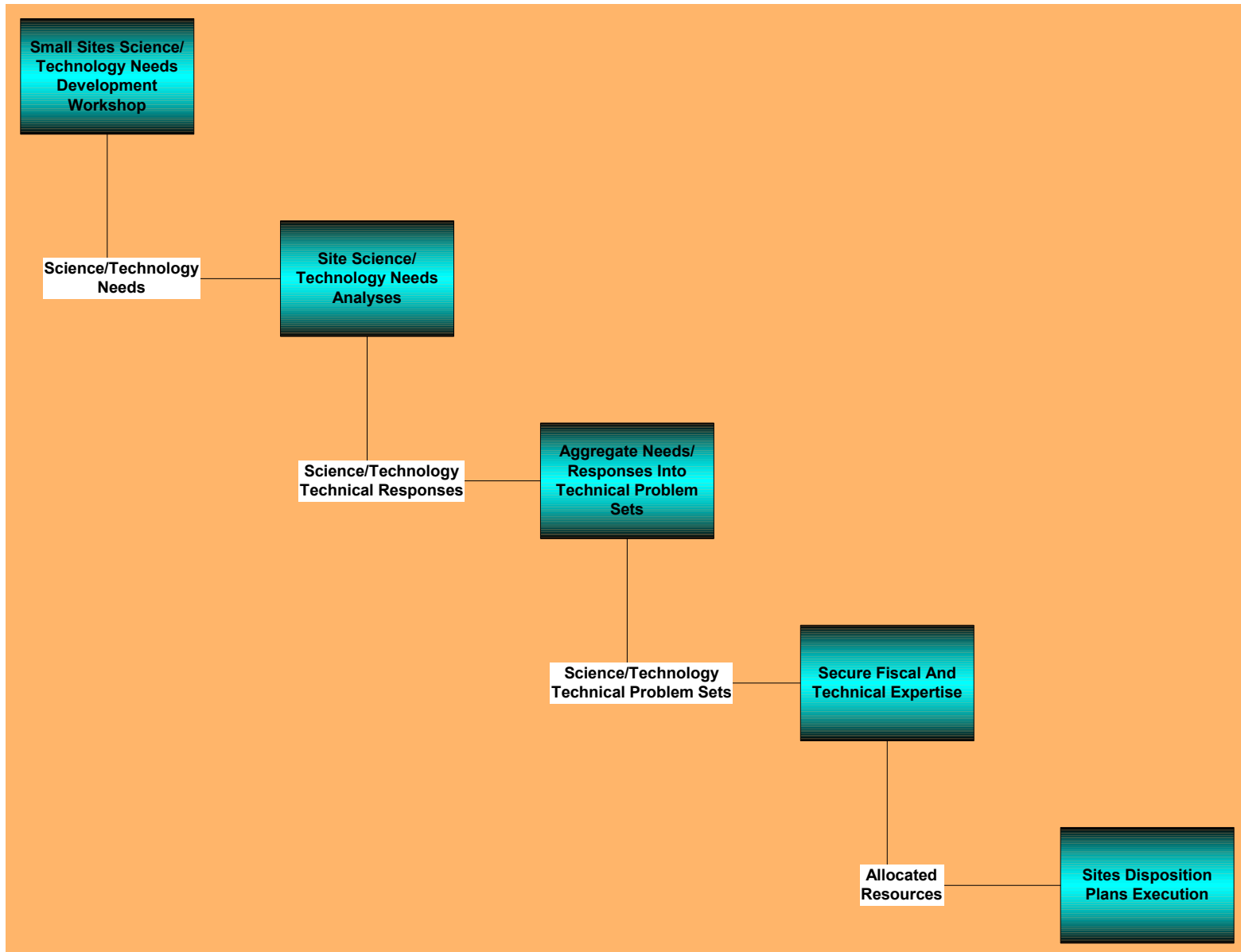
Stabilization and Transportation of Uranium Materials

Storage of Spent Nuclear Fuel at ID and SR

Stabilization and Transportation of Cs/Sr Capsules



# *Nuclear Materials Disposition Process*

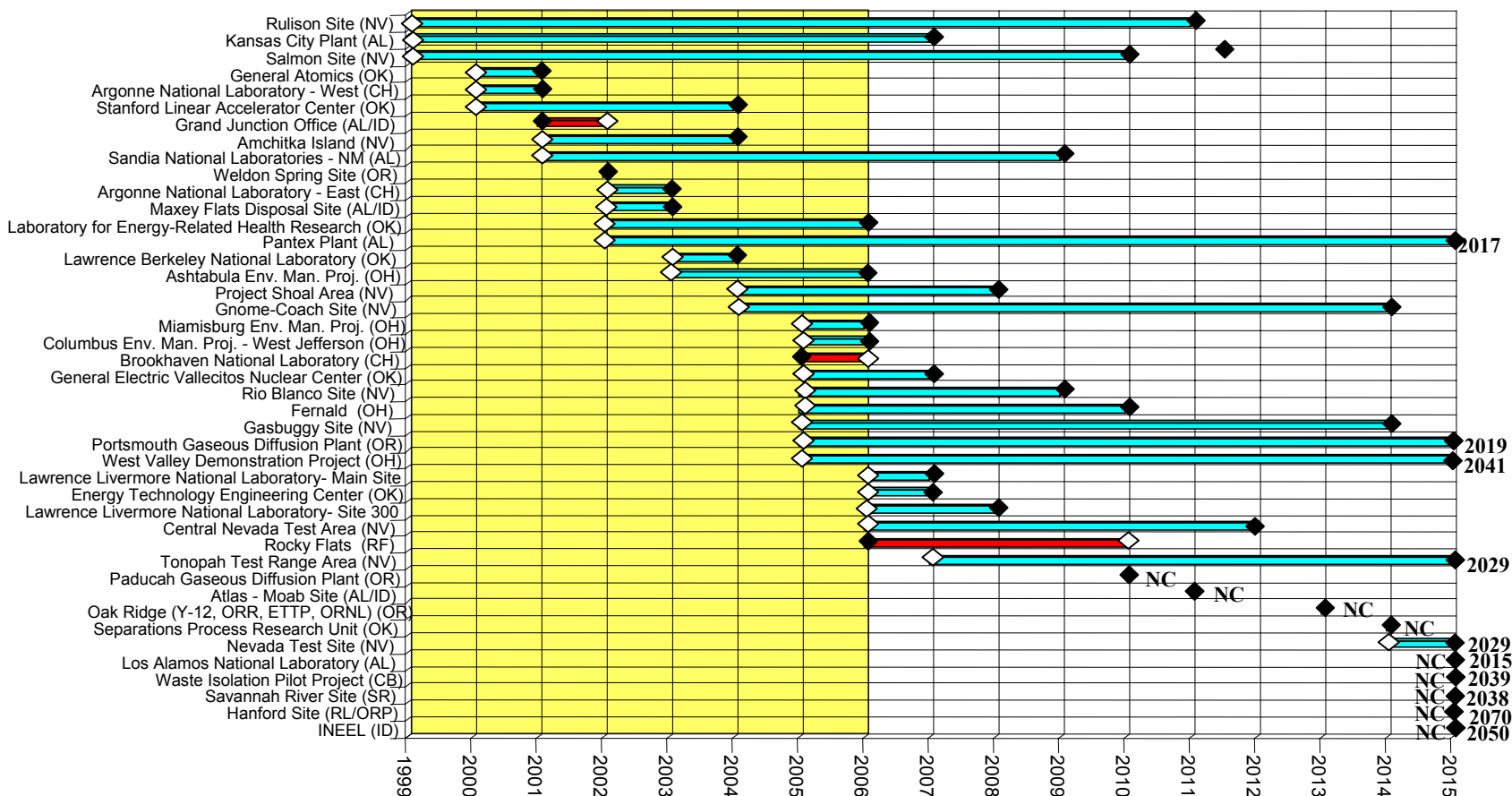




# Environmental Management Sites



(◇) Closure Date In EM's 1999 Cleanup Plan vs. (◆) Closure Date In EM's 2001 Cleanup Plan



Key:

◇ Closure Date (1999 Plan)      Schedule Delay      NC No Change in Closure Date  
◆ Closure Date (2001 Plan)      Schedule Acceleration

Source: IPABS FY2001 Planning Data as of 11/2/01



# *Nuclear Materials Disposition Candidates*

---



Ames Laboratory - Ames, IA

Ashtabula Environmental Management Project - Ashtabula, OH

Columbus Environmental Management Project - Columbus, OH

Environmental Management Laboratory - New York, NY

Fermi National Accelerator Laboratory - Chicago, IL

Princeton Plasma Physics Laboratory - Princeton, NJ

Thomas Jefferson National Facility - Newport News, VA

Energy Technology Engineering Center - Simi Valley, CA

General Atomics - San Diego, CA

General Electric Vallecitos Nuclear Center - Pleasanton, CA

Laboratory for Energy-Related Nuclear Research - Davis, CA

Stanford Linear Accelerator Center – Menlo Park, CA



# Summary



- **Removal of nuclear materials is critical path to site closure**
- **Cannot remove materials without addressing following issues:**
  - Characterization
  - Moisture measurement
  - Gas generation
  - Packaging / Transportation
  - Interim and long-term storage
- **Orphan materials lacking identifiable pathways require disposition alternatives analyses and institution of removal processes**
- **EM-50/NMFA Transition:**
  - Technical Assistance activities
  - Consolidate nuclear material
  - Closure Facilities (PFP, F-Canyon) need to be included in Thrust 1
  - Small Sites are identified element requiring Thrust 1 integration

---

---

# Legacy Weapon Component Processing

---

---

## Second Joint NISSMG/NMFA Small Sites Workshop

**Dr. Michael S. Blau**

**April 23-25, 2002**

**Lawrence Livermore National Laboratory**

Work performed under the auspices of the U.S. Department of Energy by  
Lawrence Livermore National Laboratory under Contract W-7405-Eng-48

Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, CA 94551



# Weapon Component Processing

- **The primary goal of the LLNL Weapon Component Processing Group is to develop processing techniques that will be used in future by DOE Complex.**
- **The customer for the R&D work in the past has been Materials Disposition (Pit Disassembly and Conversion Facility)**
- **The current customer for R&D work is Defense Programs (Modern Pit Facility)**
- **The feed material for the R&D has been legacy weapon components**
- **Guidance for interested small sites**

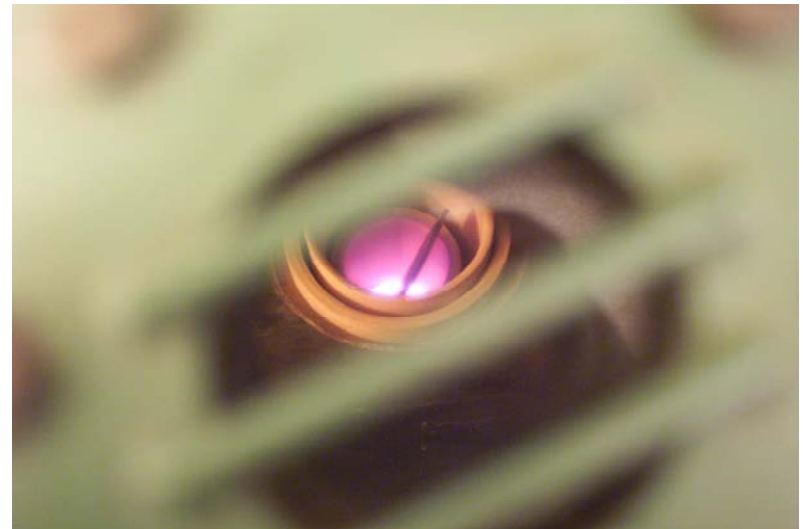
# Rocky Flats Pits Project

- Remaining pits from Rocky Flats were shipped to LLNL
- Processing steps
  - Pit bisection
  - Recovery of Pu and U using hydrogen mining
  - Sanitization of TRU classified non-SNM parts
  - **Uranium decontamination\***
- Project is almost complete
  - Contaminated HEU is the only remaining unsolved issue

\* **Uranium decontamination was outside the original agreement with Rocky Flats. There was a small amount of NMFA funding for uranium decontamination last year.**

# Rocky Flats Classified Parts Project

- Rocky Flats almost ready to ship to LLNL
  - Shipping containers issues
  - SRS path not open
- LLNL processing steps
  - Recovery of Pu using hydrogen mining
  - Sanitization of TRU classified non-SNM parts (including Ta)
- Automated HYDOX will be demonstrated



Molten steel dissolving tantalum

# **SRS Classified Parts Project**

- **SRS is almost ready to ship to LLNL**
  - **Shipping containers**
  - **SRS path to open**
- **LLNL processing steps**
  - **Recovery of Pu using hydrogen mining**
  - **Sanitization of TRU classified non-SNM parts**

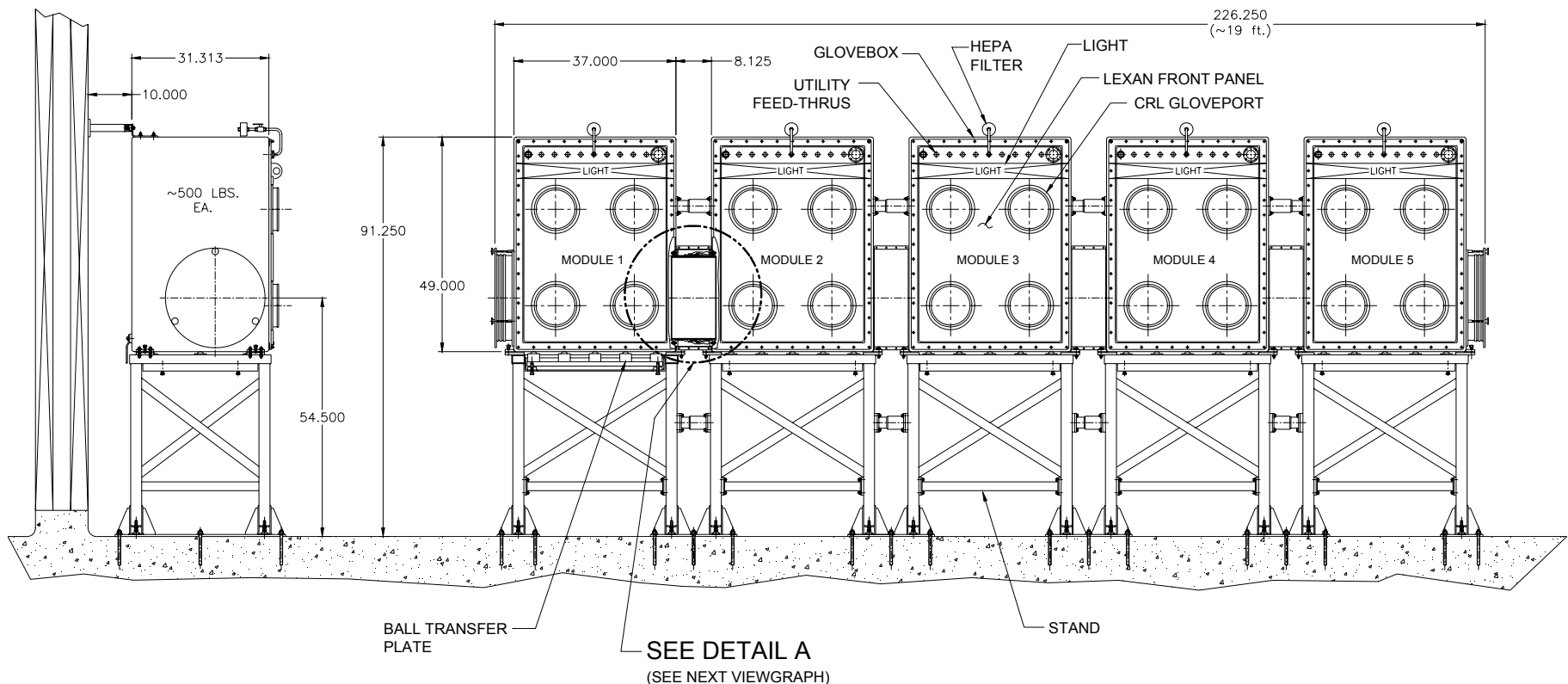
# **Weapons Components Project**

- **Last remaining weapons components at Rocky Flats and weapons components at SRS will be sent to LLNL for a process demonstration**
- **NMFA (ASTD) funded project**
- **This project will demonstrate a new type of Pu glovebox**
  - **The glovebox will be made of replaceable sections that will fit in a standard TRU-Pak II waste box**
  - **Different materials will be used in each section to determine better aqueous glovebox materials for the future**
- **This work creates possible path for NTS**
- **Related parts from Mound**

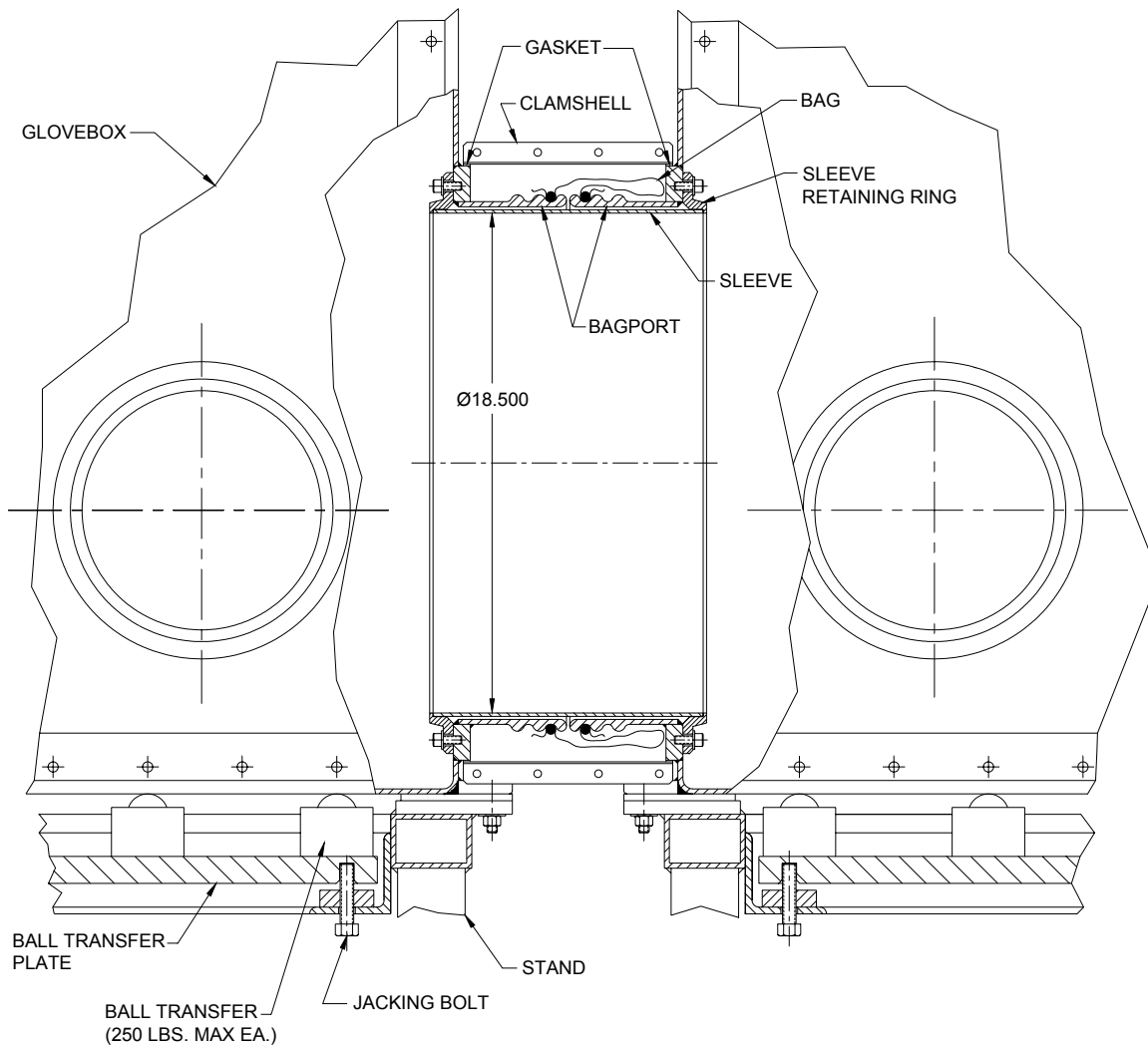
# Glovebox Layout



- All glovebox modules and stands are interchangeable
- Modules will be Hastelloy C-22, Titanium, and Kynar lined stainless steel
- Modules designed to conform to American Glovebox Society guidelines

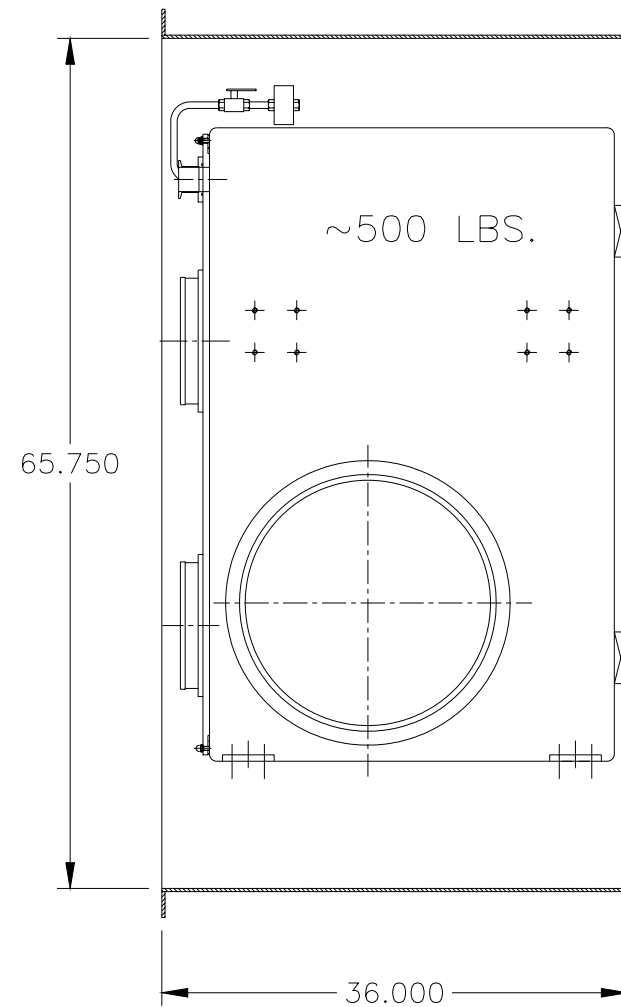
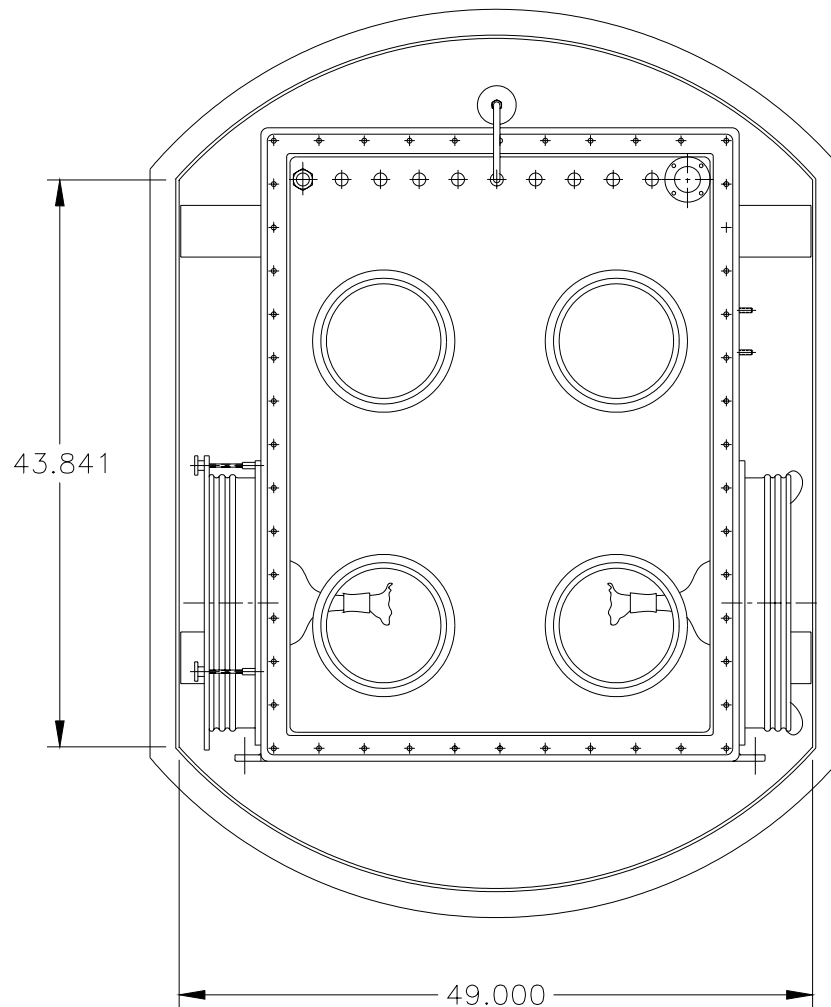


# Module connection



DETAIL A

# Module designed to fit in TRU Waste Box



# Classified TRU and Pu-Contaminated HEU

## No Paths

- Major Problem for large and small Sites
  - except for Rocky Flats
- “Classified TRU” is any **unwanted** classified items that have an activity of more than 100 nCi per gram
- Pu-contaminated HEU is uranium that either swipes greater the 20 dpm alpha per 100 cm<sup>2</sup> or has a Pu bulk concentration greater than 210 parts per billion (Y-12 acceptance criteria)
- LLNL sanitization process recently went online
- LLNL performing feasibility testing on HEU decontamination

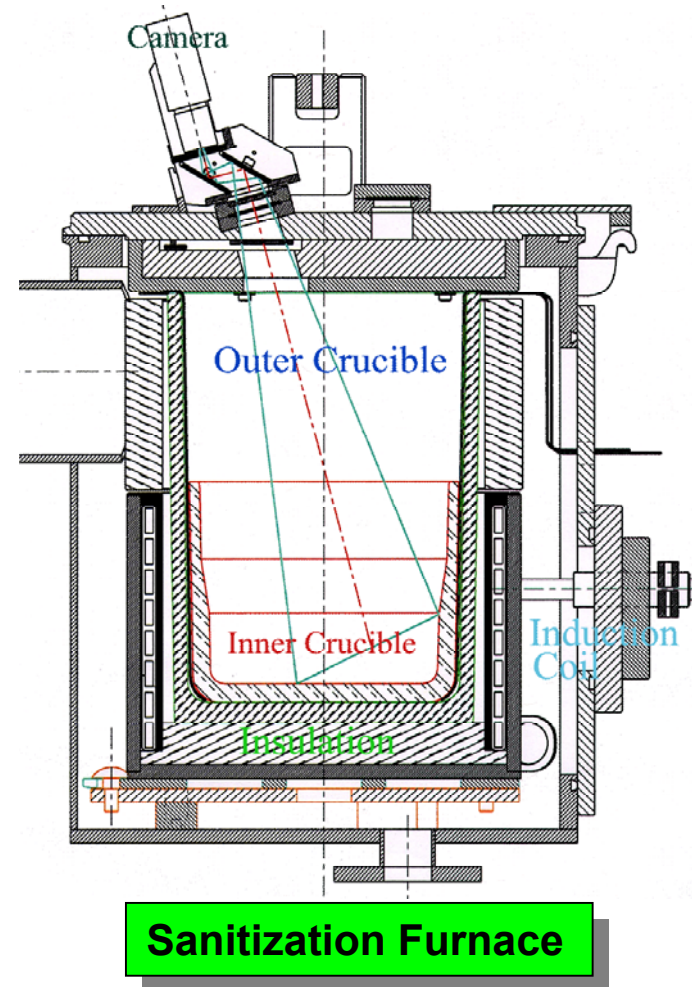
# WIPP as a Path for Classified TRU

- WIPP is Licensed to permanently **dispose** of TRU **waste**
- **Classified TRU is not waste**
  - Military Munitions Rule (40 CFR 260.10) requires sanitization of classified parts before they can be **declared waste**
  - DOE Property Rule (41 CFR 109-43.307-51) requires excess DOE property to be sanitized prior to **any disposition** action
- Rocky Flats Path
  - Judge declared many items at Rocky Flats waste
    - Including drums of classified TRU

# LLNL Sanitization Process

## Path Forward

- Sanitize classified TRU parts produced by:
  - Rocky Flats Pits Project at LLNL
  - Mound parts
  - 89 Classified Parts Project
  - SRS Classified Parts Project
  - Weapon Components Project
  - Other current LLNL projects
- Perform sanitization demonstration
  - LLNL inventory (not funded)
  - Parts from small sites
- Develop and demonstrate production scale sanitization process (not funded)
- Guidance for small sites



# Plutonium-Contaminated HEU

- Only demonstrated system for surface decontamination of Pu from HEU was electrolytic decontamination at Rocky Flats
  - System was based on electrolytic decontamination developed at Los Alamos National Laboratory
  - System requires simple geometrics with even spacing between parts and fixtures
- Unallocated Off-Spec HEU Recommendation for Disposition Report
  - Potential future path
  - Dissolution of parts with subsequent Pu-U separation has issues
  - SRS canyons required for this option
- LLNL is developing a CO<sub>2</sub> cleaning system
  - Contaminated matrix is cleaned by impact of frozen CO<sub>2</sub> pellets

# Theory of CO<sub>2</sub> Cleaning



- CO<sub>2</sub> cleaning is non-conductive, non-toxic, and non-abrasive
- CO<sub>2</sub> pellets exit blast nozzle at Mach 1.2
- Impact of the CO<sub>2</sub> pellets loosens the bond between the contaminant and the substrate
- CO<sub>2</sub> pellets shatter and sublime into a gaseous state
  - Large volume increase (800 times)
  - Expanding CO<sub>2</sub> gas form a layer between the contaminant and the substrate that acts like a spatula and peels off the contaminant
- Cooling of the contaminant assists in breaking its bond with the substrate
- The dry ice does not pulverize the contaminant (or the substrate)
- The gaseous CO<sub>2</sub> leaves only the removed contaminant as waste
  - No secondary waste is produced

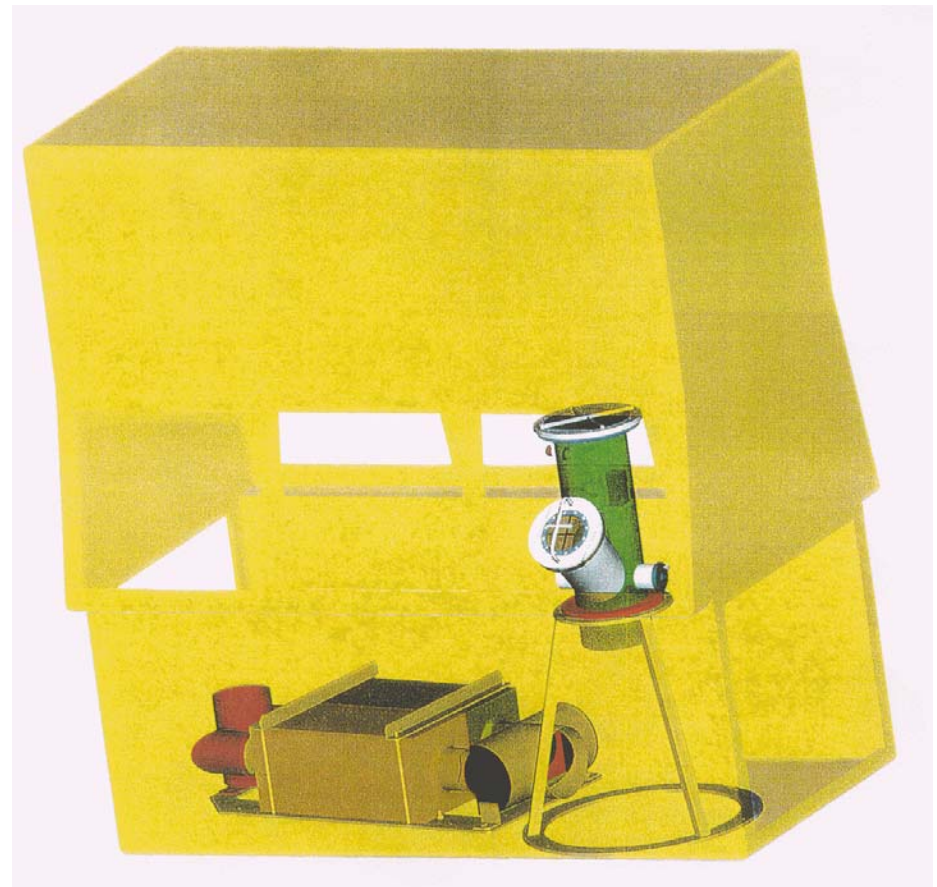
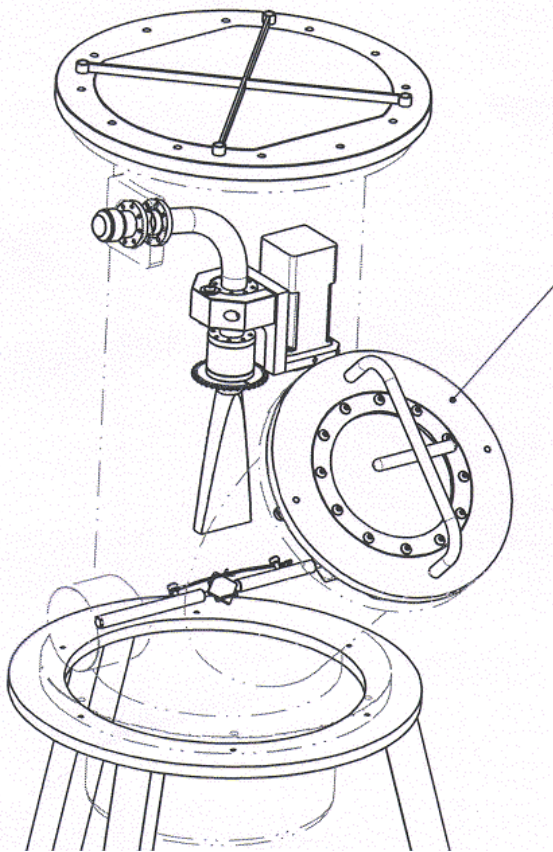
# LLNL Results



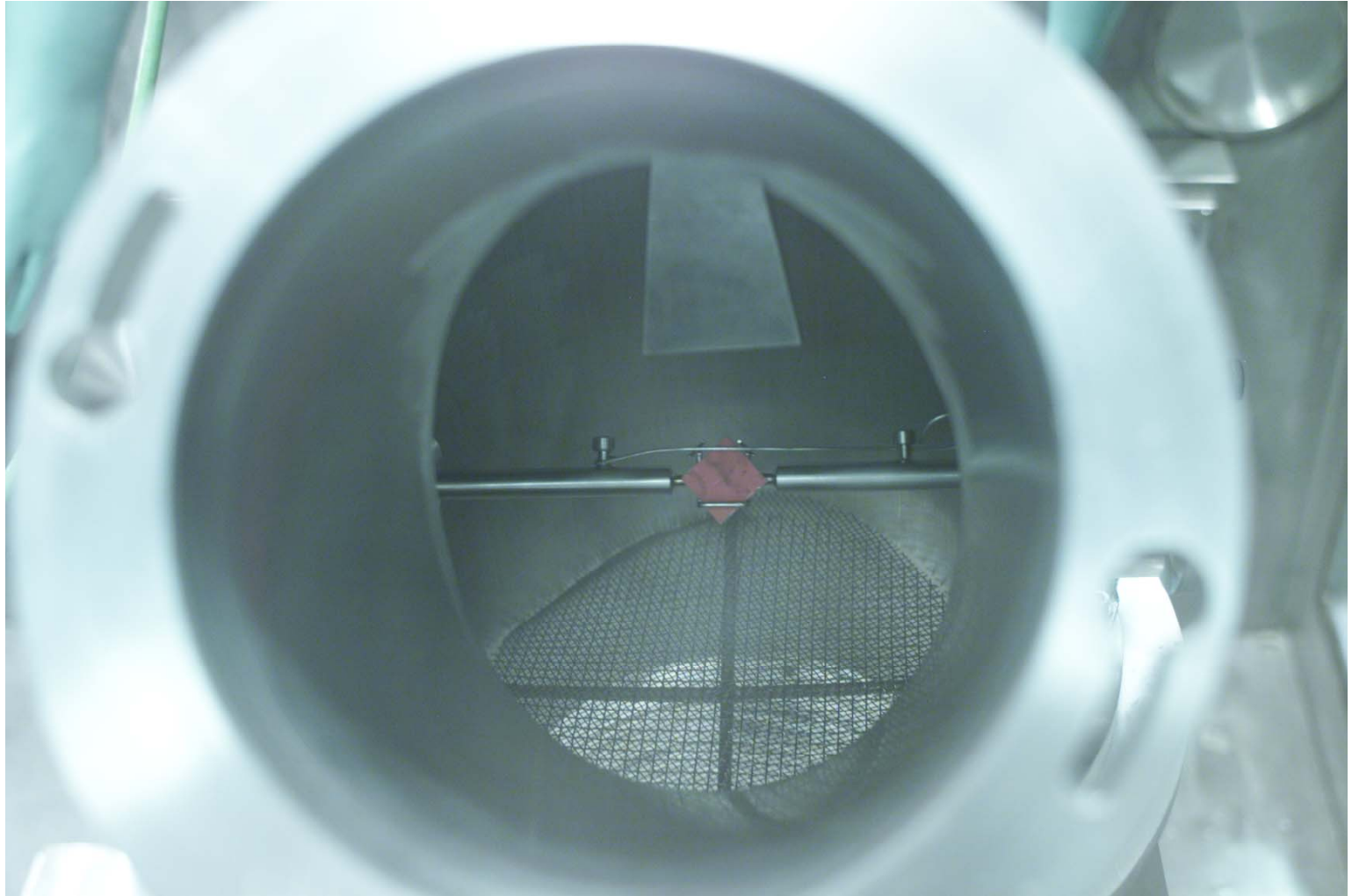
- **CO<sub>2</sub> cleaning removed paint from aluminum parts without abrading the aluminum matrix**
- **CO<sub>2</sub> cleaning removed oxide from depleted uranium samples without abrading the uranium matrix**
- **Uranium swipes show no chamber contamination!**
- **Increasing the blast pressure increases the abrasive effect of CO<sub>2</sub> cleaning**
- **Removed Pu contamination from depleted uranium samples**
  - **over 250,000 counts per minute**
- **Guidance for interested small sites**

# Phase II Testing

## CO<sub>2</sub> Cleaning



# Phase II Testing Fixture





**NISSMG/NMFA**

**Small Sites Needs Workshop**

**April 23-24, 2002**

**STEVEN HAMP**

**National Transportation Program**



The National Transportation Program is a DOE corporate transportation resource which provides support services for the accomplishment of DOE program missions.



## **NATIONAL TRANSPORTATION PROGRAM (NTP) MISSION:**

To provide policy, guidance, and a transportation infrastructure to ensure the availability of safe, compliant, and efficient transport of DOE materials, with the exception of non-commercial classified shipments of national security interest.



## **NTP Management Team**

- EM-24, Office of Transportation
  - Policy, Budget Advocate, & HQ Liaison
- Albuquerque Operations Office, NTP-A
  - Transportation Services & Operations
- Idaho Operations Office, National Programs Division
  - Systems Engineering

[www.ntp.doe.gov](http://www.ntp.doe.gov)



## **Types of Services**

NTP provides tools and services to enable the achievement of critical DOE program goals.

- Shipment Planning
- Transportation Operations
- Packaging Technology Services



# Shipment Planning

- Long-Range Shipment Forecast
- Campaign Specific Transportation Planning
  - Guidance
  - Route Selection
  - Cost Estimating
  - Transportation Information & Communication
  - Risk Assessment
- Institutional Relations



# Transportation Operations

- Safety Oversight and Trends
- Compliance Training
- Regulatory Analysis
- Automated Billing
- Shipment Tracking and Communications
- Transportation Logistics
  - Shipment Optimization



## Packaging Technology Services

- Packaging Management
  - Facilitate Corporate Use of Packaging
  - Packaging Procurement & Quality Assurance
  - Packaging Needs Assessment
- Packaging Design Concepts
- Package Testing and Analysis
- Technical Positions Presented to Regulators

# PROCESSING OF ORPHAN URANIUM MATERIALS TO ENHANCE DISPOSITION

NISSMG/NMFA  
Small Sites Needs Workshop  
April 23-25, 2002

**NMFA**  
Nuclear Materials Focus Area



# TOPICS

- Background
- Reuse Within The Commercial Fuel Cycle
- Processing Alternatives Evaluation
- Dry Processing Overview
- Lifecycle Schedule and Cost
- Summary
- Current Status

# Orphan Uranium Materials

- Adequate characterization needed
- Processing required to meet current WAC
- Contamination exceeds ASTM specifications
- No commercial interest
- Classified as both product and waste

# Complex-Wide Problem

<u>Location</u>	<u>MTU</u>	<u>Enrichment</u>	<u>Form</u>	<u>Classification</u>
FEMP	280	LEU	oxide, metal & misc.	waste
RFETS	107	DU	roaster oxides	waste
Portsmouth	3,000	DU, NU & LEU	oxide, metal & finished fuel	product
SRS	932	DU, NU & LEU	oxide & metal	waste
Hanford	957	NU & LEU	oxide & fuel assemblies	waste
Other	>1,000	DU, NU, LEU	various	waste & product

# Orphan Uranium Materials



7314-D4820

Top Crops



7314-D4817

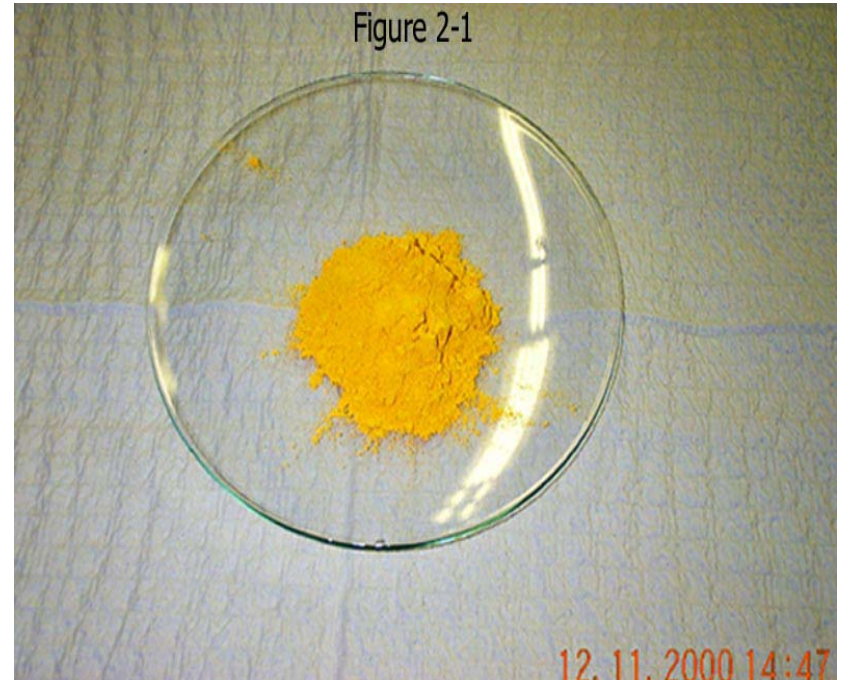
Rockwell Spills

# Orphan Uranium Materials



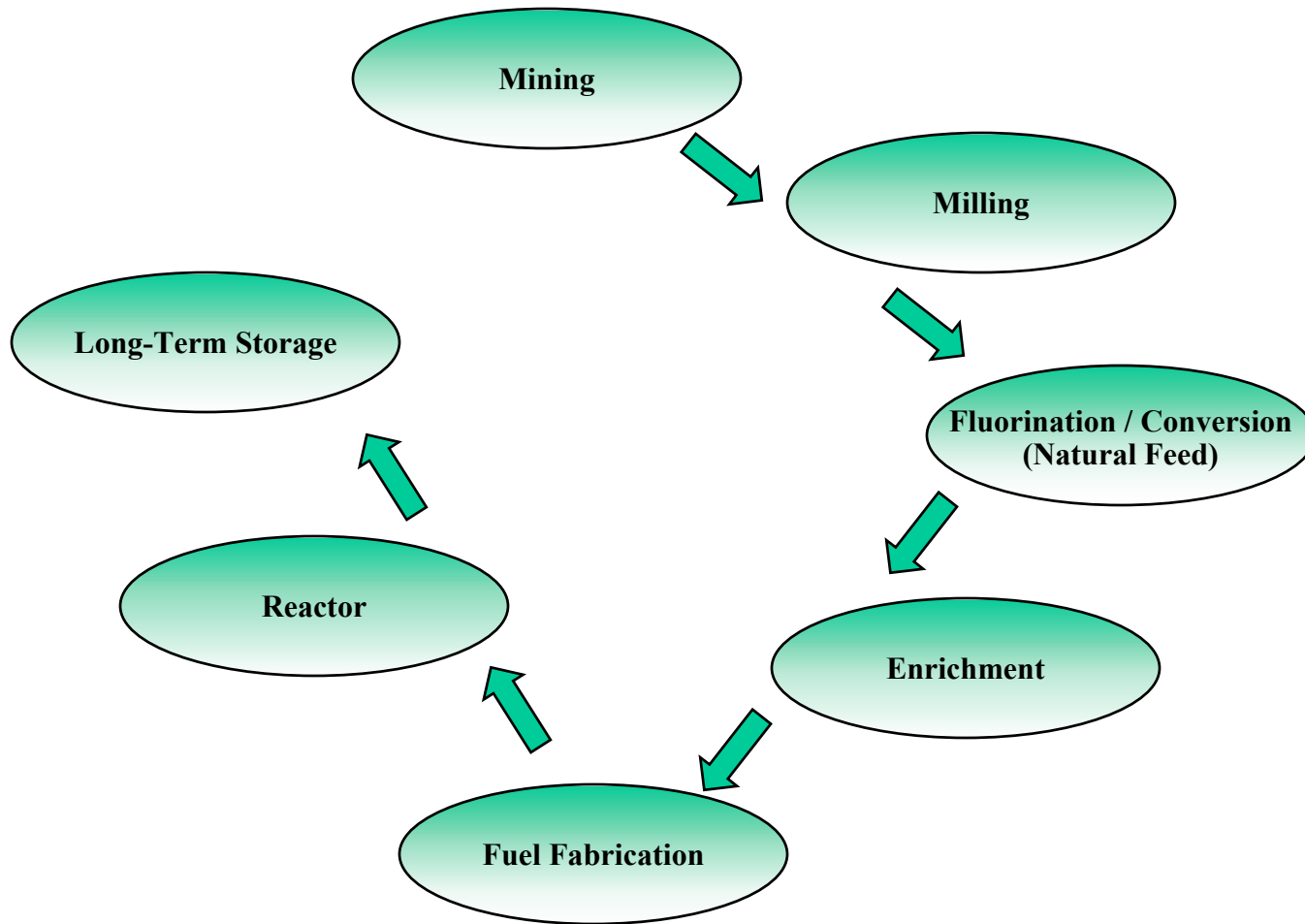
7314-D4824

Zirco Ends

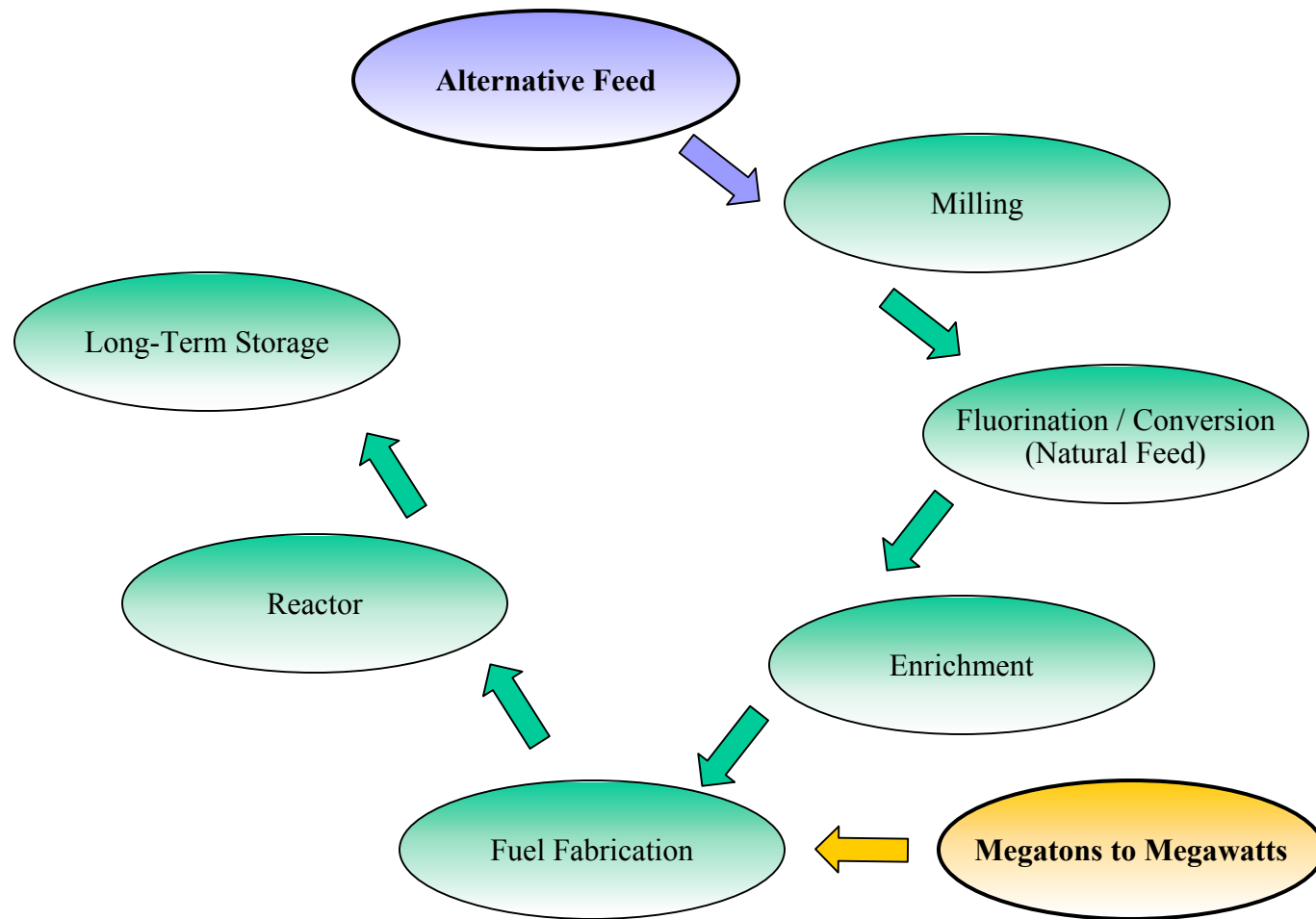


$\text{UO}_3$

# US Commercial Nuclear Fuel Cycle (Conventional)

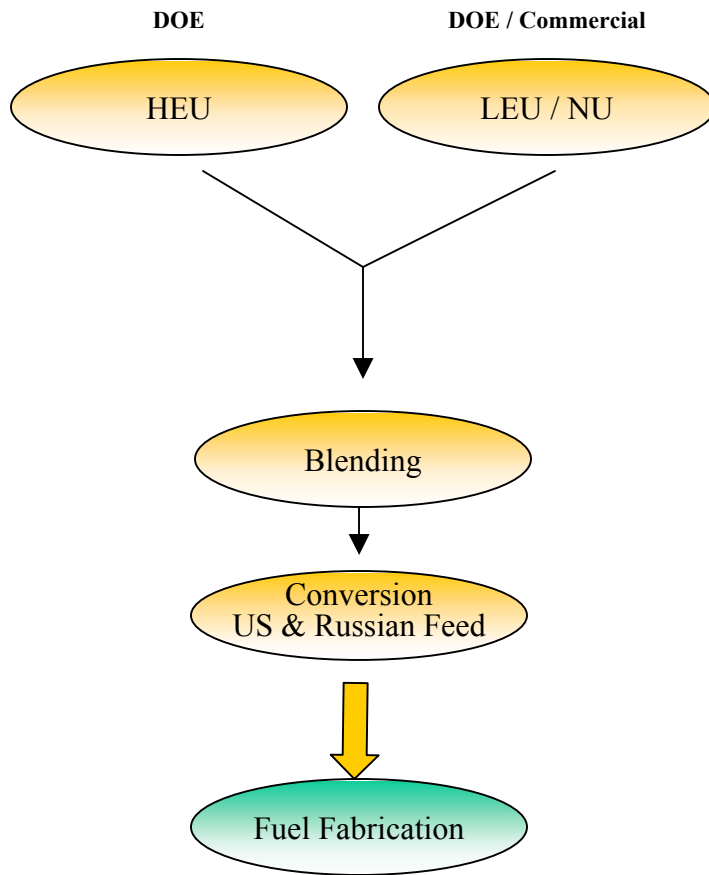


# US Commercial Nuclear Fuel Cycle (Current)

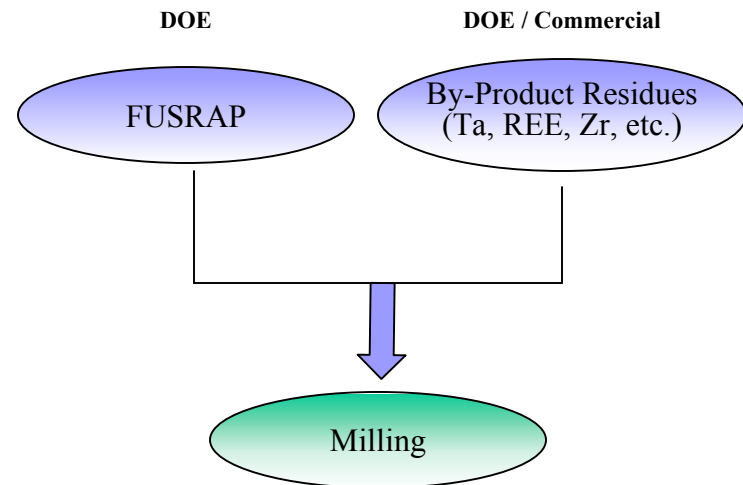


# US Commercial Nuclear Fuel Cycle (Current Changes)

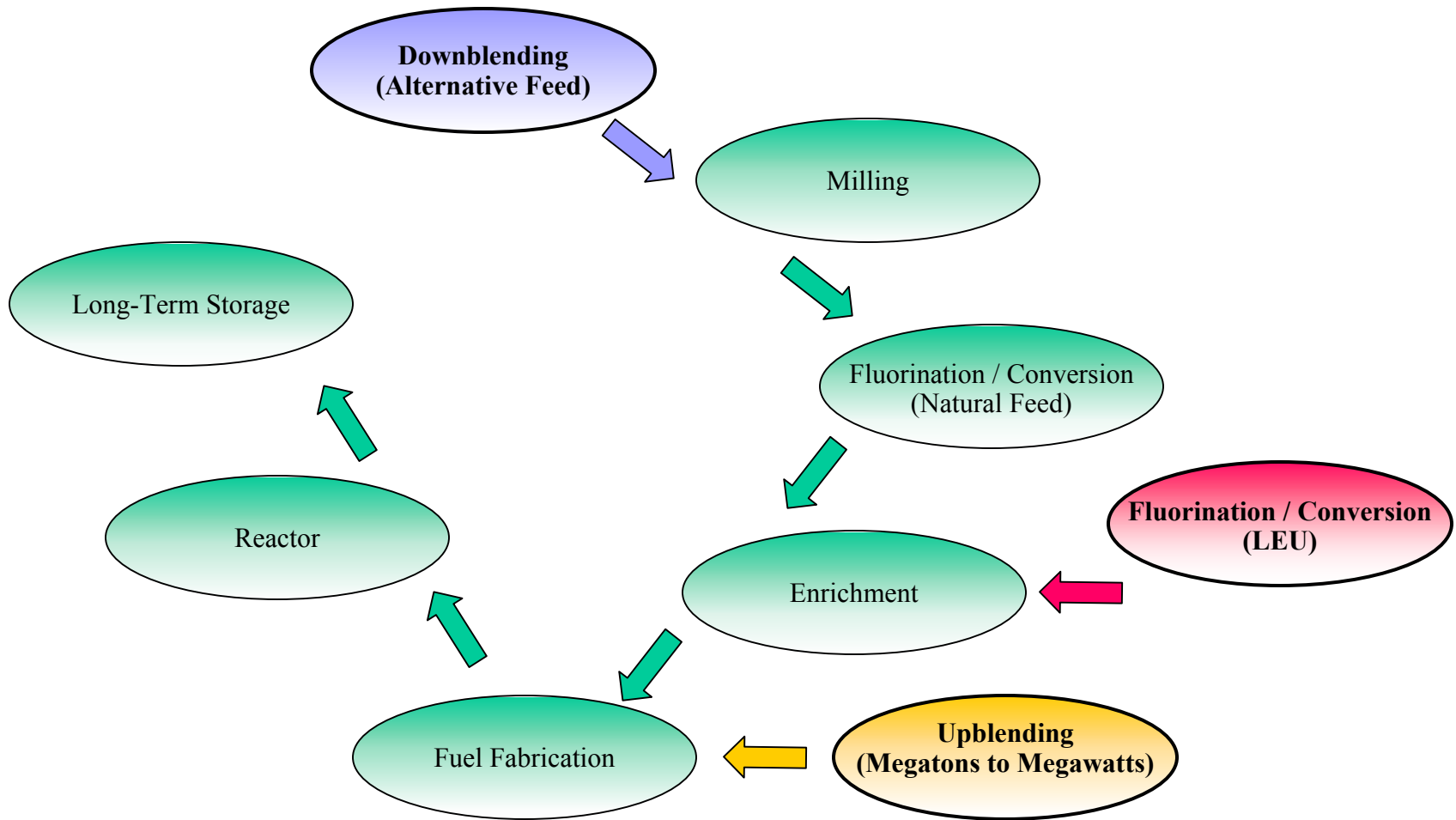
## Megatons to Megawatts



## Alternative Feed

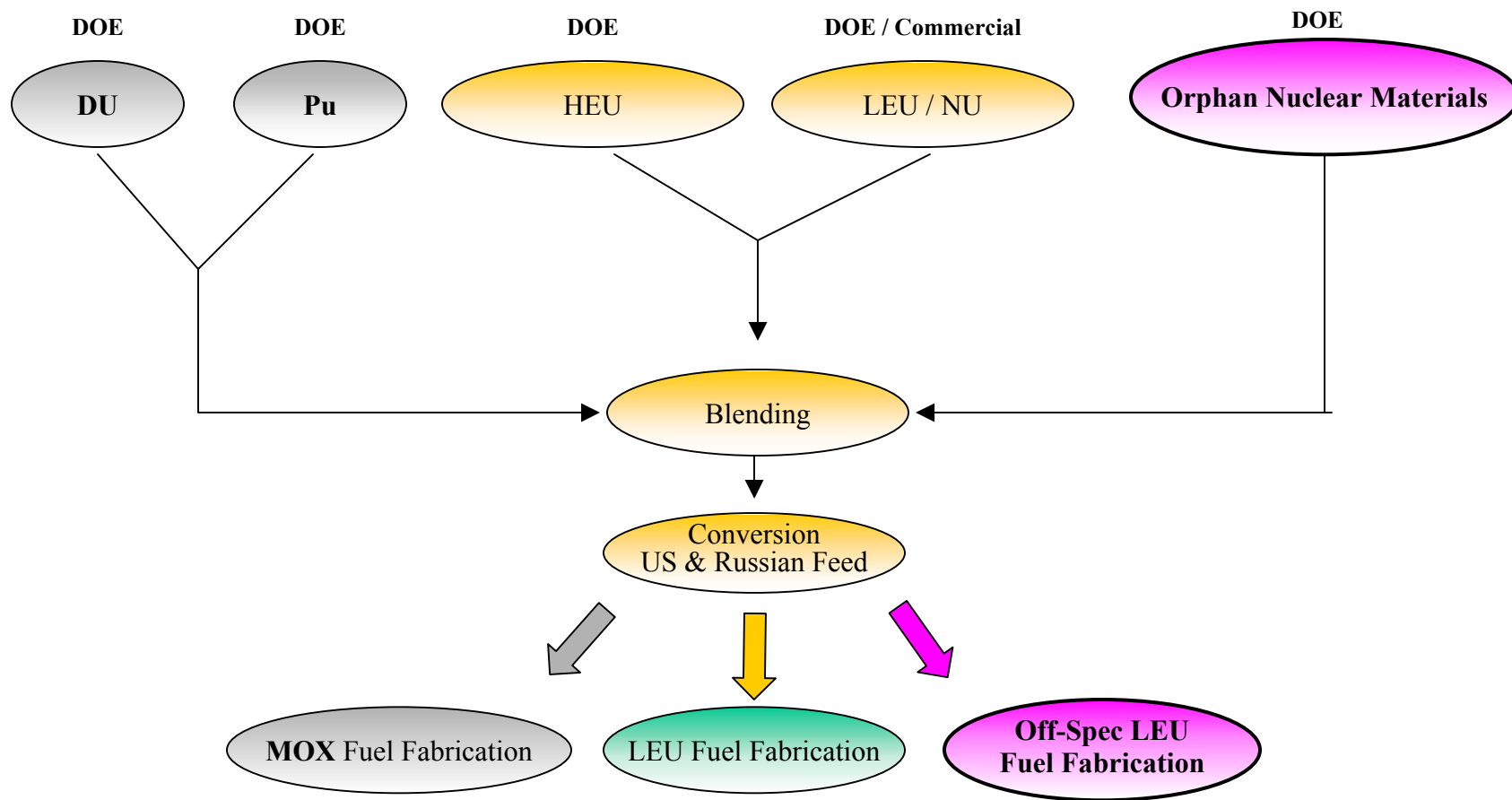


# US Commercial Nuclear Fuel Cycle (Orphan Nuclear Materials Placement Scenarios)



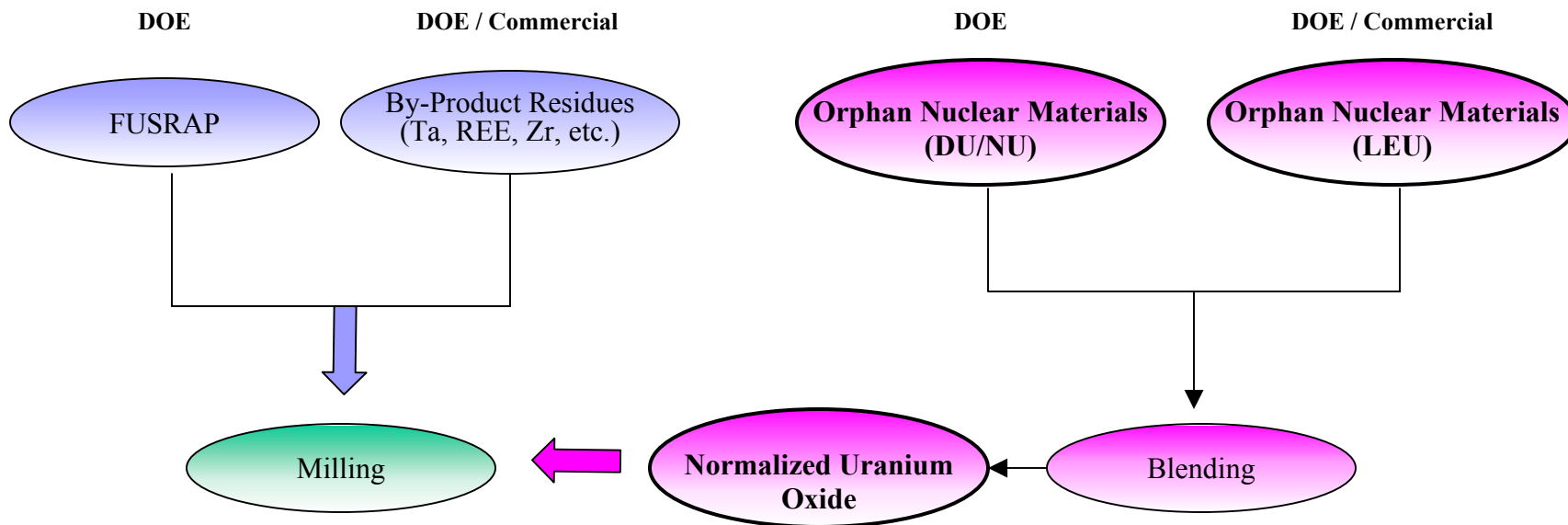
# FEMP Nuclear Materials Processing Alternatives Evaluation (Upblending)

## Megatons to Megawatts



# FEMP Nuclear Materials Processing Alternatives Evaluation (Downblending)

## Alternative Feed



# Orphan Nuclear Materials Processing Alternatives Evaluation

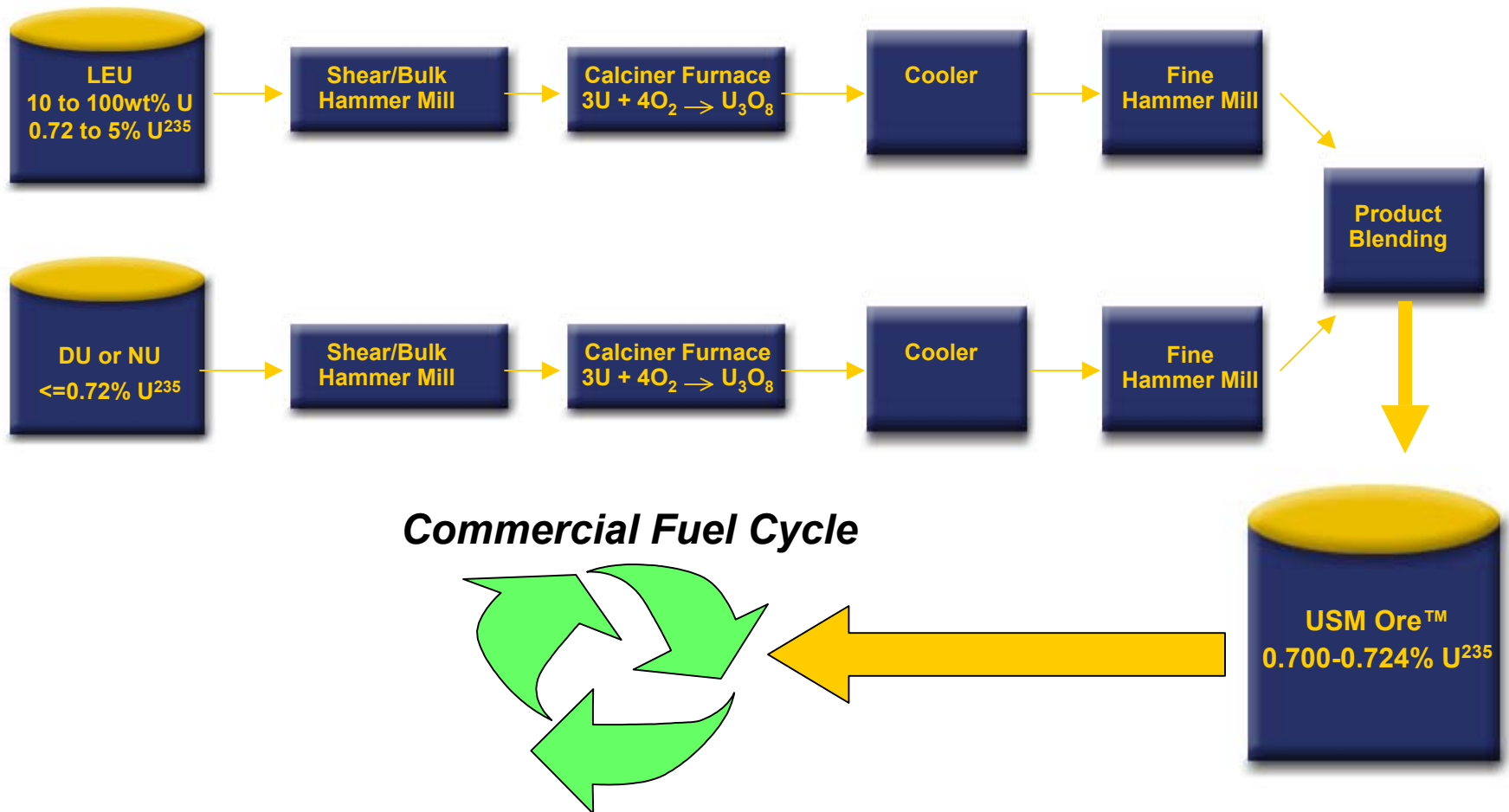
- Fluorination
  - Not viable path for orphan nuclear materials
  - Expensive
- Upblending (Megatons to Megawatts)
  - Not a viable path for all orphan nuclear materials
  - Exception maybe some oxides for off-spec fuel program
- Downblending / Dry Processing (Alternative Feed)
  - Recommended for further evaluation
  - Flexible feed and product

# Why Dry Processing ?

- Reduce criticality safety concerns and controls
- Higher processing rates without moderating materials
- Elimination of wastewater treatment facility operations and associated regulations
- Most fuel fabricators have converted from wet to dry processing

# *SynNat<sup>SM</sup>*

## Dry Processing Block Flow Diagram



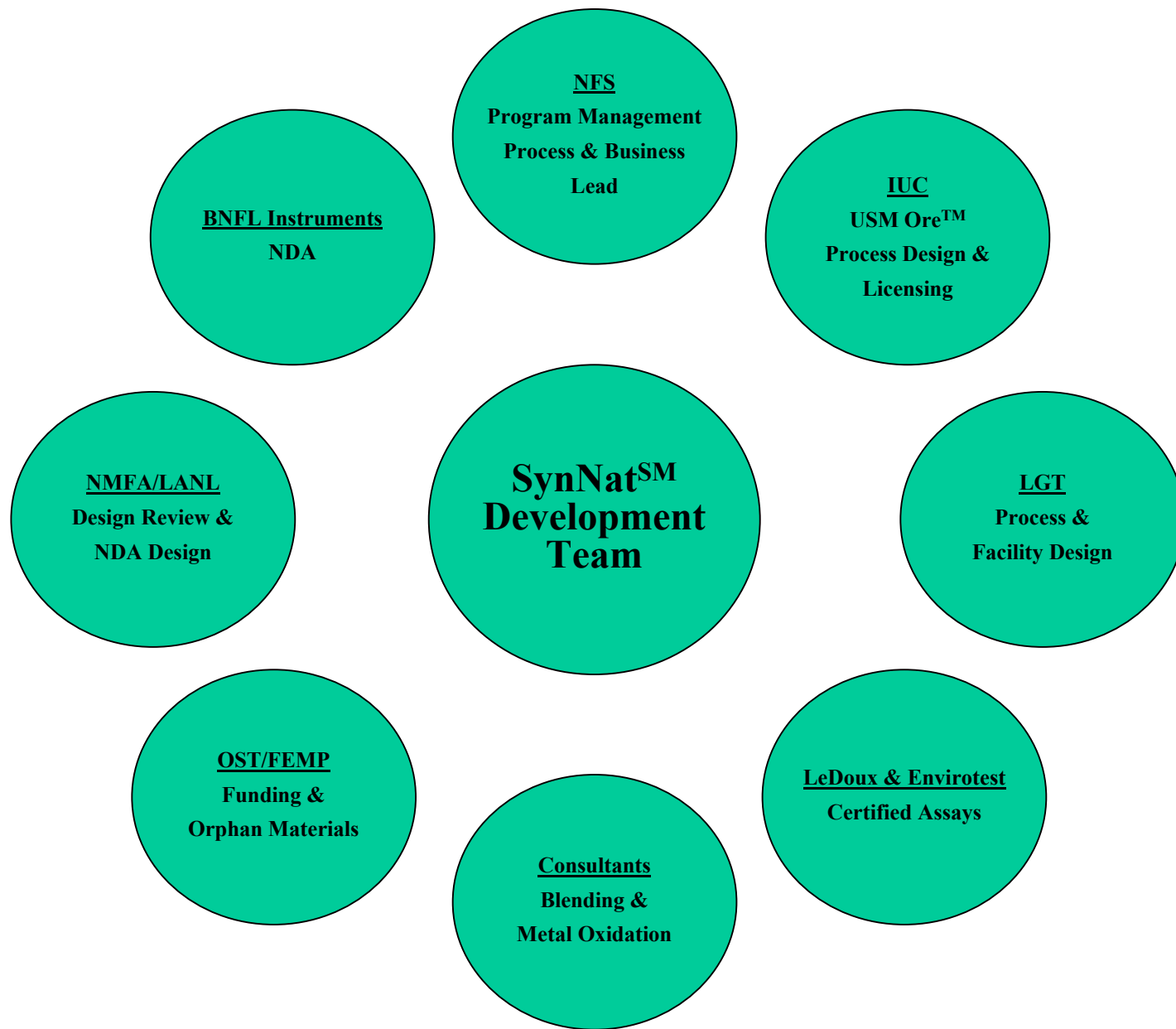
# *SynNat<sup>SM</sup>* Feed Acceptance Criteria

- DU, NU, LEU ( $\leq 5\text{wt}\% \text{U}^{235}$ )
- Metal, metal alloy, clad metal, etc.
- Finished and semi-finished fuel
- $\text{UO}_2$ ,  $\text{UO}_3$ ,  $\text{U}_3\text{O}_8$
- Metal spills, prills, slag, etc.
- Trace TRU and Tc contamination
- Various sizes, shapes and forms

# Preliminary Design

## **NFS Experience**

- HEU (metal,  $\text{UF}_6$ ,  $\text{UO}_2$ )
- MOX Fuel ( $\text{UO}_2$ - $\text{PuO}_2$ )
- LEU (metal, oxide,  $\text{UF}_6$ )
- DU and NU (metal, oxide,  $\text{UF}_4$ )
- HEU and LEU resource recovery



# Preliminary Design Activities

- Material Characterization (actual material)
- Process Chemistry (actual material)
- Process Engineering (actual material)
- Design Engineering
- Waste Management
- Operations
- Material Transportation / Receipt / Storage / Transfer
- Material Logistics and Handling
- Licensing / Permitting
- Health Physics / Industrial Safety
- Criticality Safety / Non-Destructive-Assay (NDA)
- Blending Analysis
- Cost Estimating

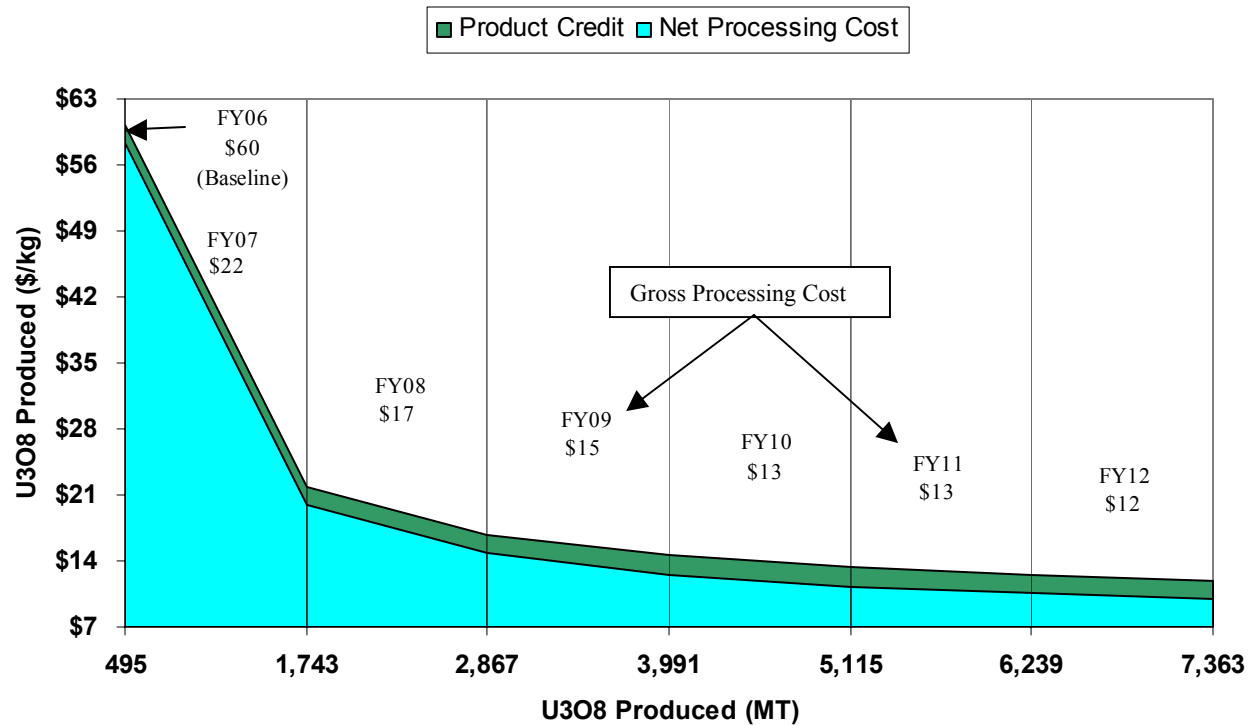
# Lifecycle Schedule & Costs Parameters

- Complex-Wide Solution – Economies of Scale
- Feed (3,740MT LEU / 2,219MT DU / 286MT NU)
- Lifecycle Activities
  - Material Receipt / Interim Storage / Transfer
  - Licensing / Design / Procurement
  - Construction / Startup
  - Processing Operations / Packaging
  - D&D
- Confidence Interval on Cost Not to Exceed  $\pm 25\%$

# *SynNat*<sup>SM</sup> Lifecycle Schedule

Task Name	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Receipt of Material											
Material Storage											
Licensing/Design/Procurement											
Construction/Start-up											
FEMP Baseline Processing											
Complex-Wide Processing											

# *SynNat*<sup>SM</sup> Lifecycle Cost



## Summary

### **Orphan Uranium Materials are a Complex-Wide Problem**

- Product orphan materials have shown no commercial interest.
- Some wasted orphan materials are awaiting the broadening of NTS' WAC.
- Other wasted orphan materials cannot meet current or planned WAC.

## Summary

### ***SynNat*<sup>SM</sup> Processing is a Complex-Wide Solution**

- Competitive with transportation and storage for those wasted materials meeting current or future WAC.
- Supports DOE's Nuclear Materials Management Plan (June 2002) and DOE's EM priorities set by Jessie H. Roberson on September 21, 2001.
  - Consolidate & de-inventory nuclear materials
  - Close RFETS, FEMP and other sites by 2006
  - Reduce the cost and time of cleanup

## Summary

### **Additional Benefits**

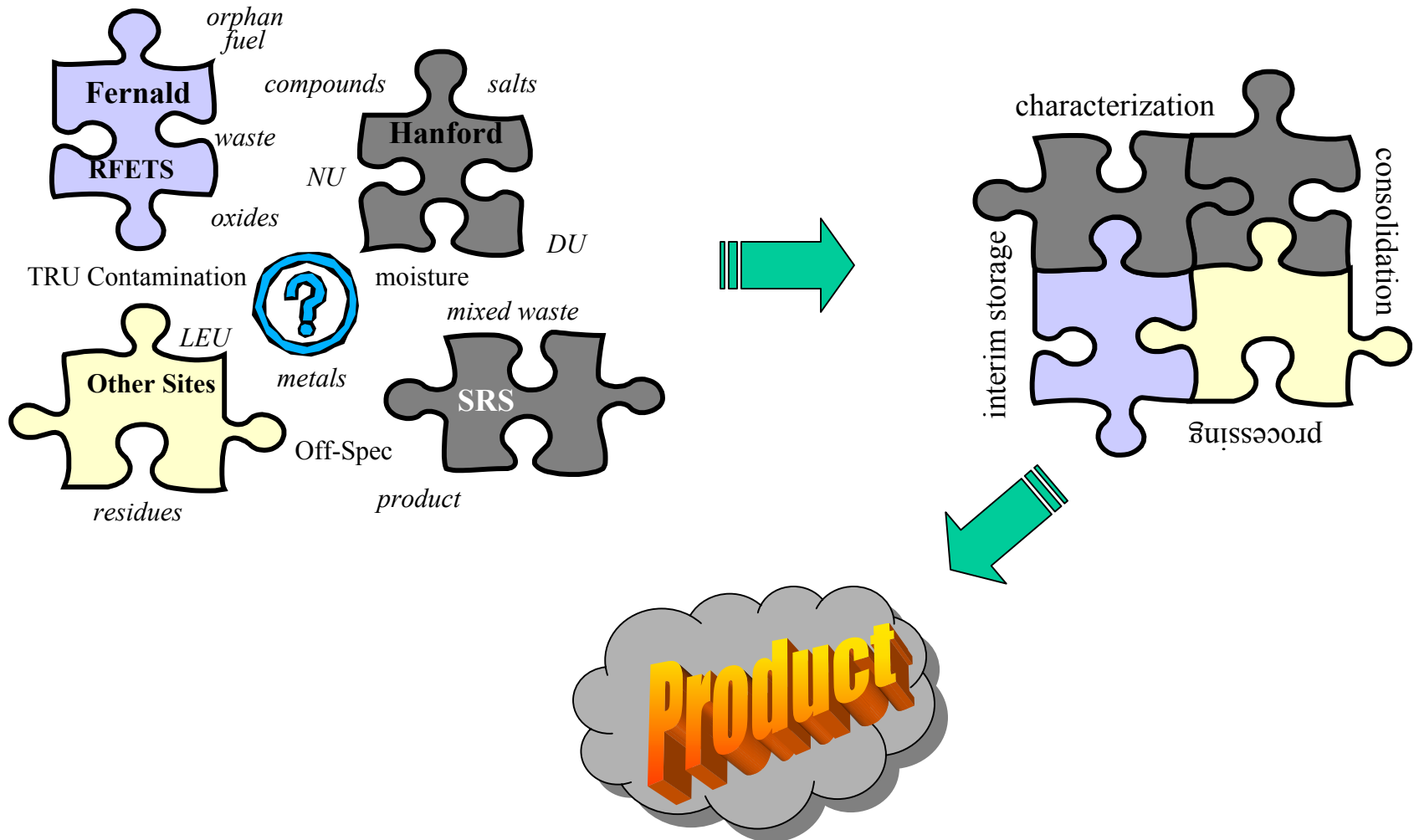
- Provides a viable option for orphan materials
- Provides a solution as opposed to moving the problem from one location to another
- Provides jobs to the depressed US milling, conversion and enrichment markets
- Reuse supports DOE's Pollution Prevention Principles
- Provides for over 30 years of fuel for a 1,000MWe LWR

## **Current Status & Direction**

- Continuing process design activities
- Preparing license application for processing
- Developing complex wide database of potential feed material
- Working with affected sites on current baseline disposition paths
- Preparing strategy to obtain site and program funding

# END OBJECTIVE

## Orphan Uranium Materials Disposition



# U.S. Department of Energy



## Office of Isotopes for Medicine and Science

**Presented by:**  
**Amy Taylor**  
**John Carty**



## Mission

***To maintain the infrastructure required to support the national need for a reliable supply of isotope products, services, and related technology used in medicine, industry, and research.***

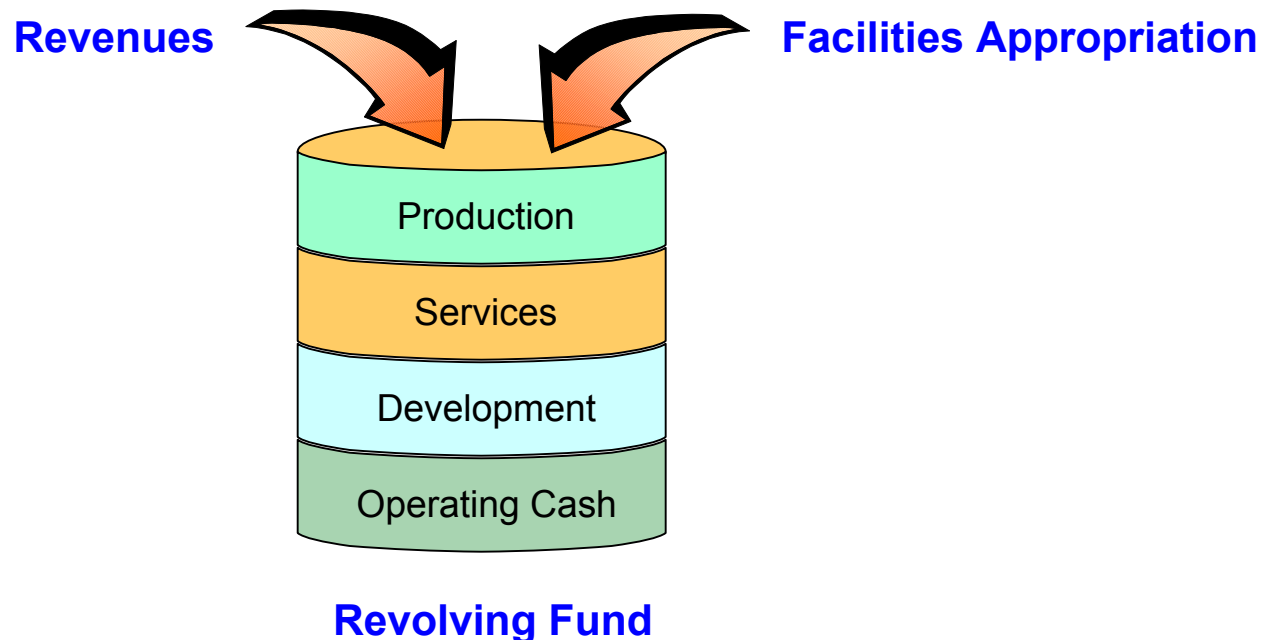


# Revolving Fund



## Revolving Fund

- Isotope Programs operates under a revolving fund
- Program costs are financed by two resources



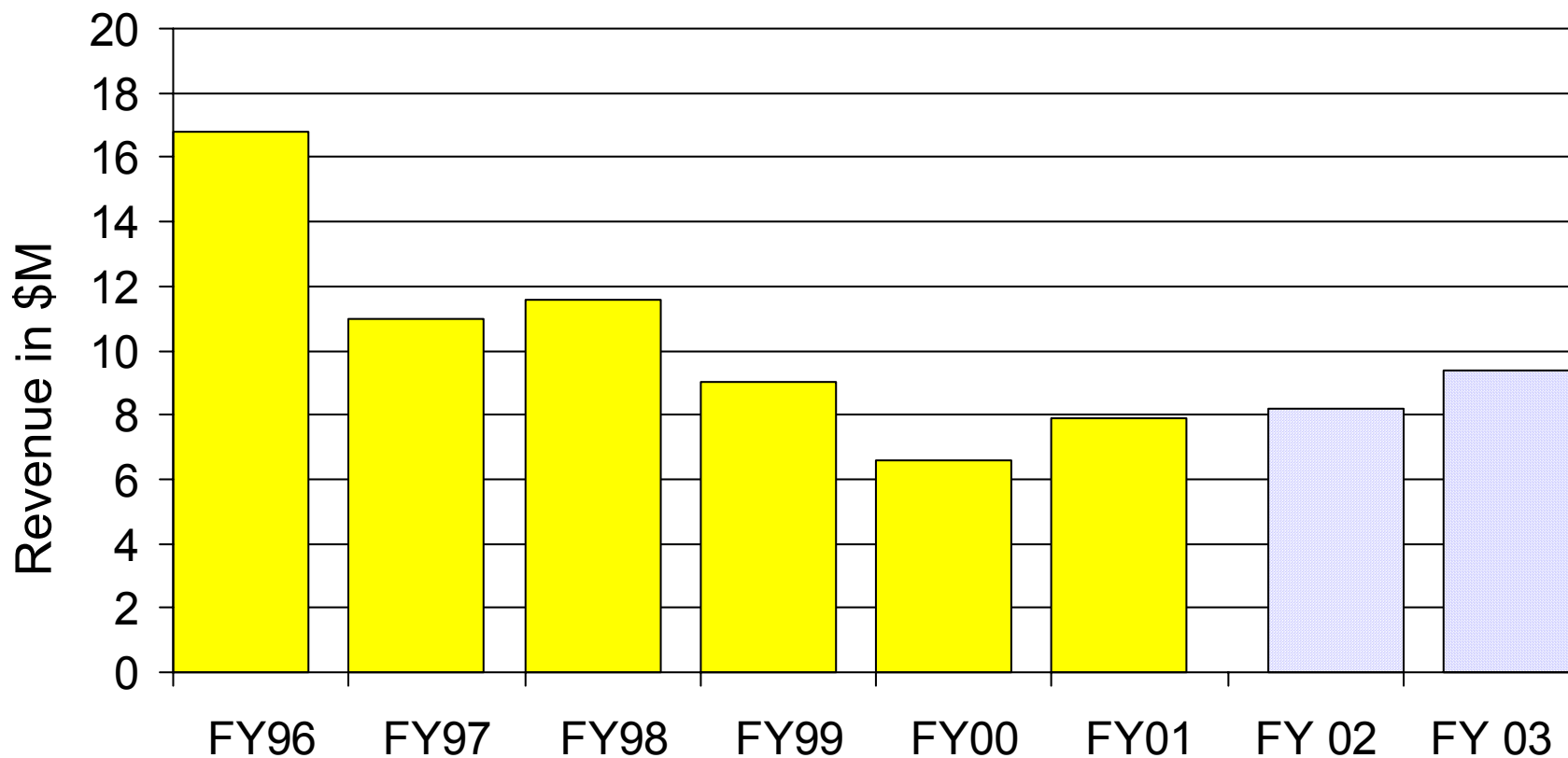


## Pricing Policy

- **Prices are based on:**
  - **Research isotopes must be priced to recover all direct production costs.**
  - **Commercial isotopes must be priced to recover all direct and indirect production costs including allocated facility costs.**



## DOE Isotope Sales





# Facilities Maintenance Appropriation

## *What Does it Support?*

- **Capability to produce isotopes, e.g., hot cells fixed cost**
- **Facility costs associated with the production of research isotopes**
- **Equipment including transportation assets**
- **Process improvement**



# Isotopes in Medical Therapy



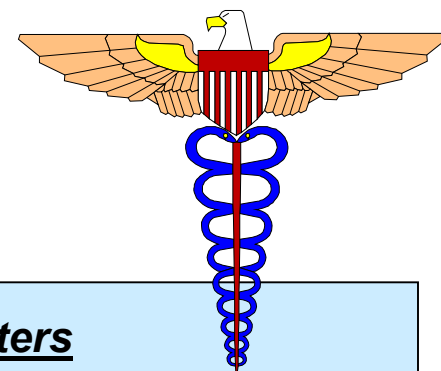
# **Nuclear Medicine Addresses Major Diseases**

- **One in two U.S. males and one in three U.S. females will develop invasive cancers in his or her lifetime**
- **Fifty-seven million Americans (one in five) have one or more types of cardiovascular disease**
- **Nearly 40 million Americans (one in seven) have arthritis**



## Cancer Therapy

- Types of cancers treated
  - Leukemia (Bi-213)
  - Thyroid (I-131)
  - Prostate (Pd-103, I-125)
  - Non-Hodgkin's Lymphoma (Y-90, I-131)
- Link radioactive isotopes to monoclonal antibodies or to peptides that seek cancer cells
- Brachytherapy- solid radioactive isotopes are implanted to kill cancer cells



### Beta Emitters

Copper-67

Iodine-131

Yttrium-90

Iodine-125

Palladium-

103

Rhenium-188

### Alpha Emitters

Bismuth-213

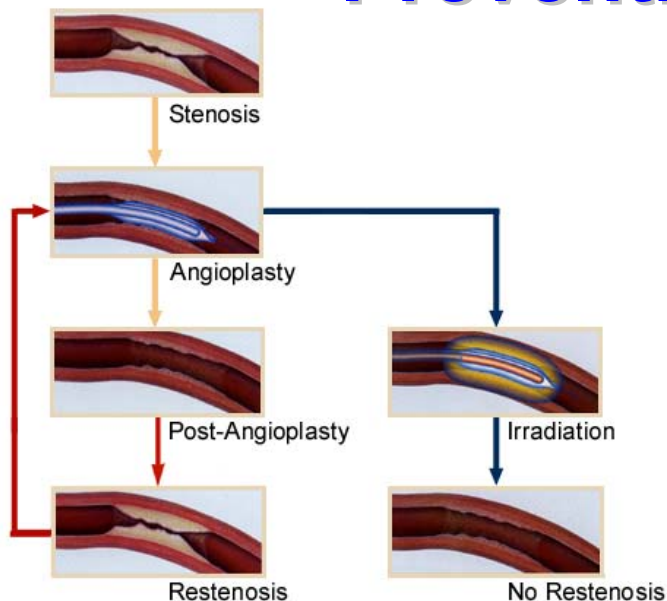
Astatine-211

Radium-223



## Prevention of Restenosis

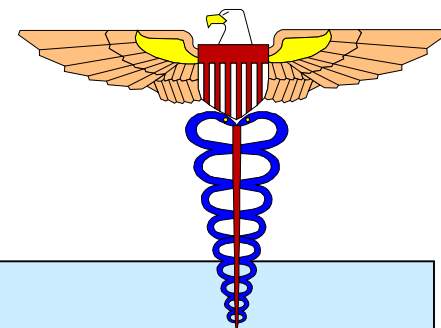
- Radioisotopes are used to help arteries remain clear after vascular angioplasty.



Restenosis: Neo-intimal hyperplasia 2 weeks after injury



Post-Radiation: 14 GY radiation in an injured pig vessel, cross section 2 weeks after intervention



### Beta Emitters

Yttrium-90  
Rhenium-188  
Strontium-90

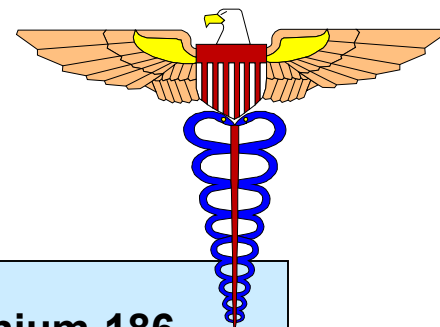
### Gamma Emitters

Iridium-192



## Bone Pain Palliation

- Radioisotopes are used to alleviate bone cancer and arthritis pain.



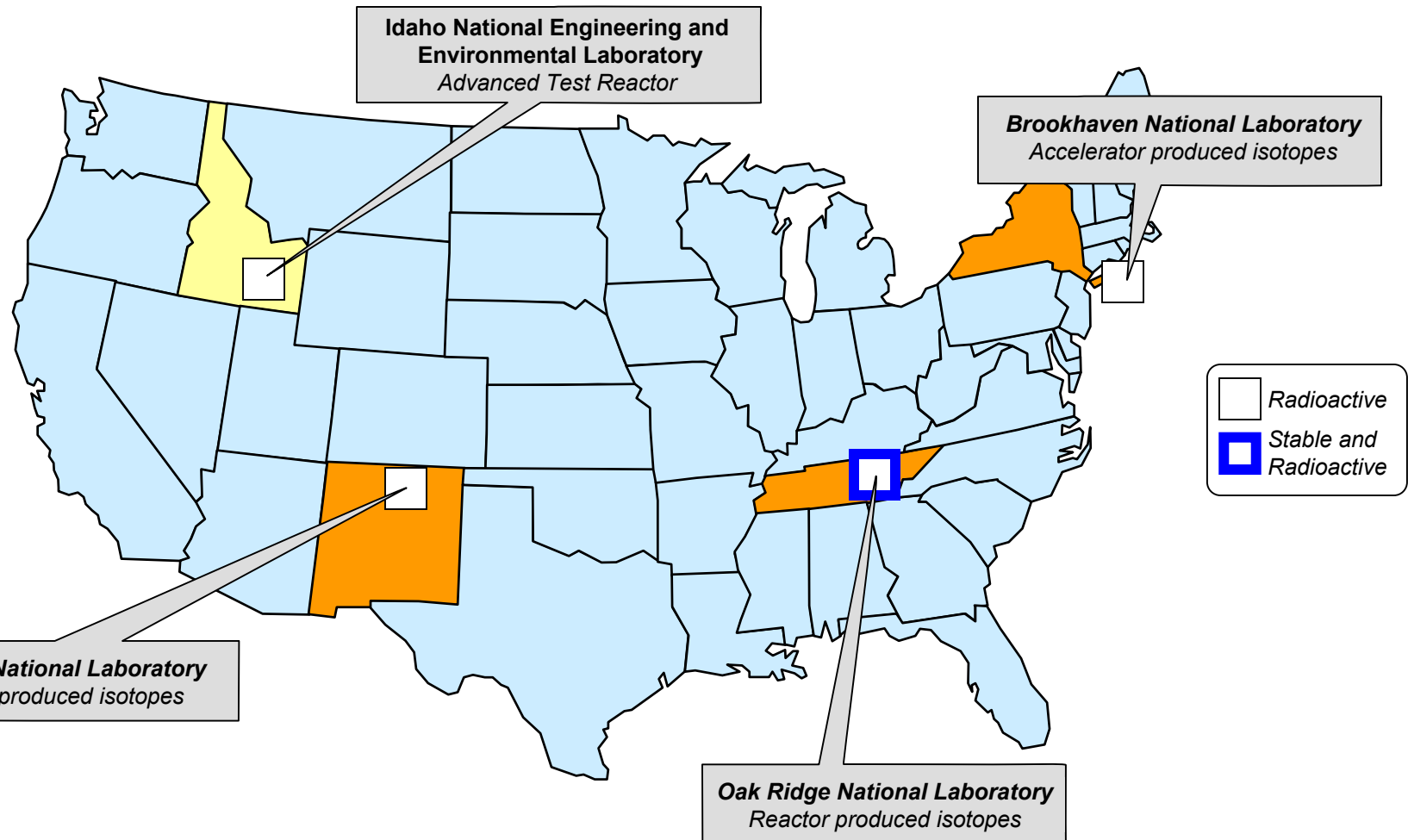
**Rhenium-186**  
**Tin-117m**  
**Strontium-89**  
**Samarium-153**



# Isotope Production and Inventory



# Isotope Production and Inventory





## Collaborating Institutions

### *Accelerators*

- **Russian Academy of Science Institute for Nuclear Research- Troitsk, Russia**
- **iThembaLABS (formerly National Accelerator Centre)- Faure, South Africa**
- **Paul Scherrer Institut- Villigen, Switzerland**

### *Reactors*

- **SCK-CEN- Mol, Belgium**



# Applications



## Isotope Uses in Research

Aluminum-26	Used as a tracer in Alzheimer's disease and acid rain research
Yttrium-90	Cancer therapy research; strong potential for commercial sales (produced by a private company from DOE-produced Sr-90)
Copper-67	Accelerator-produced isotope used for antibody labeling in cancer therapy research
Bismuth-213	Daughters in the decay chain of thorium, these alpha-emitting isotopes are used in monoclonal antibody cancer research
Silicon-32	Used as a tracer in diatoms in oceanography research related to global warming
Tungsten-188	Used in researching several types of cancer and to prevent restenosis after angioplasty



## Isotope Uses in Medicine

Cobalt-60	Used as the active agent in most teletherapy units; hundreds operating worldwide
Strontium-82	An accelerator-produced radioisotope used for cardiac imaging by positron emission tomography (PET)
Yttrium-90	Has been approved by the FDA as an agent for Non-Hodgkins Lymphoma
Californium-252	A reactor-produced radioisotope used for cancer brachytherapy, particularly ovarian/ cervical cancer
Holmium-166	Clinical trials are in progress using Ho-166 for bone marrow ablation as an alternative to chemotherapy
Germanium-68	An accelerator-produced radioisotope used as a calibration source for positron emission tomography (PET) equipment
Thallium-203	A stable isotope used as a target for the accelerator production of thallium-201, which is used in cardiac imaging



## Isotope Uses in Industry

Iridium-192	Used in radiography to inspect the structural integrity of aircraft, ships, bridges, and other structures
Californium-252	Used to monitor nuclear fuel, the moisture content of soil in road construction, and as a start up source for nuclear reactors in electron capture technology
Nickel-63	In devices that detect explosives and drugs at airport check points
Cobalt-60	Used in irradiators for sterilization of medical equipment and food



## Heavy Elements

- **The Office of Isotopes for Medicine and Science offers rare isotopic heavy elements for sale.**
- **The heavy elements are used for a variety of uses, such as calibration standards, Radioisotope Thermoelectric Generators (RTGs), and basic research.**
- **Inventory of several elements has been exhausted, such as: U-236, Pu-241, Th-228.**
- **The Office of Isotopes for Medicine and Science would like to discuss transfer of surplus materials from other sites to supplement current inventories.**



## Uses of Heavy Elements

Americium-241	Gauging and fire detection sources
Americium-243	Basic research and standards
Berklium-249	Basic research and standards
Californium-249	Basic research and standards
Curium-244,-248	Calibration sources and standards
Plutonium-238, -240, -241,-242	Transmutation of waste experiments, Pu-238 is a source of material for U-234 and RTGs, and a calibration source
Polonium-209	Environmental testing
Thorium-228,-229,-230	Basic research, Th-229 is a precursor to Ac-225
Uranium-233,-234,-235, -236,-238	Sources for nuclear fuel monitoring



## Additional Nuclear Materials

Li-6	Neutron capture cancer research, neutron detection
Li-7	Buffers in nuclear reactors, dosimeters
D <sub>2</sub> O	Deuterated compounds, medical research
He-3	Used in lasers, neutron detectors, and cryogenic systems; improved magnetic resonance imagery procedure is being developed using He-3



# Isotope Services Provided



## Isotope Services

- **The Office of Isotopes for Medicine and Science offers a variety of stable and radioactive isotope services.**
- **The isotope services that can be ordered include:**
  - radioactive sources and forms
  - special stable isotope forms (such as: wires, foils, pellets)
  - special stable isotope chemical forms
- **For a complete listing of the isotopes and forms generally available to customers, please visit our catalog online at <http://www.ornl.gov/isotopes/catalog.htm>.**



## **Services Provided by the Office of Isotopes**

- **By selling surplus isotopes through the Isotope revolving fund, organizations will realize a direct benefit, because disposal costs will be avoided.**
- **The Office of Isotopes has extensive contacts in the isotopes market and can generally provide a quick assessment as to whether a product can be sold.**
- **The Office of Isotopes is especially interested in:**
  - **any isotopes that can be sold with no additional processing,**
  - **replenishing inventories of isotopes that have been depleted,**
  - **relatively high purity isotopes, or**
  - **materials that can be cost-effectively purified and/or processed for sale.**



## For More Information

### Contact

**Amy Taylor**

**(301)903-7722**

**amy.taylor@hq.doe.gov**

**John Carty**

**(301)903-1649**

**john.carty@hq.doe.gov**

**Visit our website:**

**<http://nuclear.gov>**

**<http://www.ornl.gov/isotopes/catalog.htm>**



# Off-Site Source Recovery Project



**Second Joint NISSMG/NMFA Small Sites  
Needs Workshop  
April 2002**



# Off-Site Source Recovery

---

Recovery and management of actinide bearing sealed sources meeting NRC definitions of GTCC that:

- Present a risk to public health and safety
- Present a potential loss of control by a NRC or agreement state licensee
- Are excess and unwanted and are a DOE responsibility under PL 99-240, or are DOE-owned



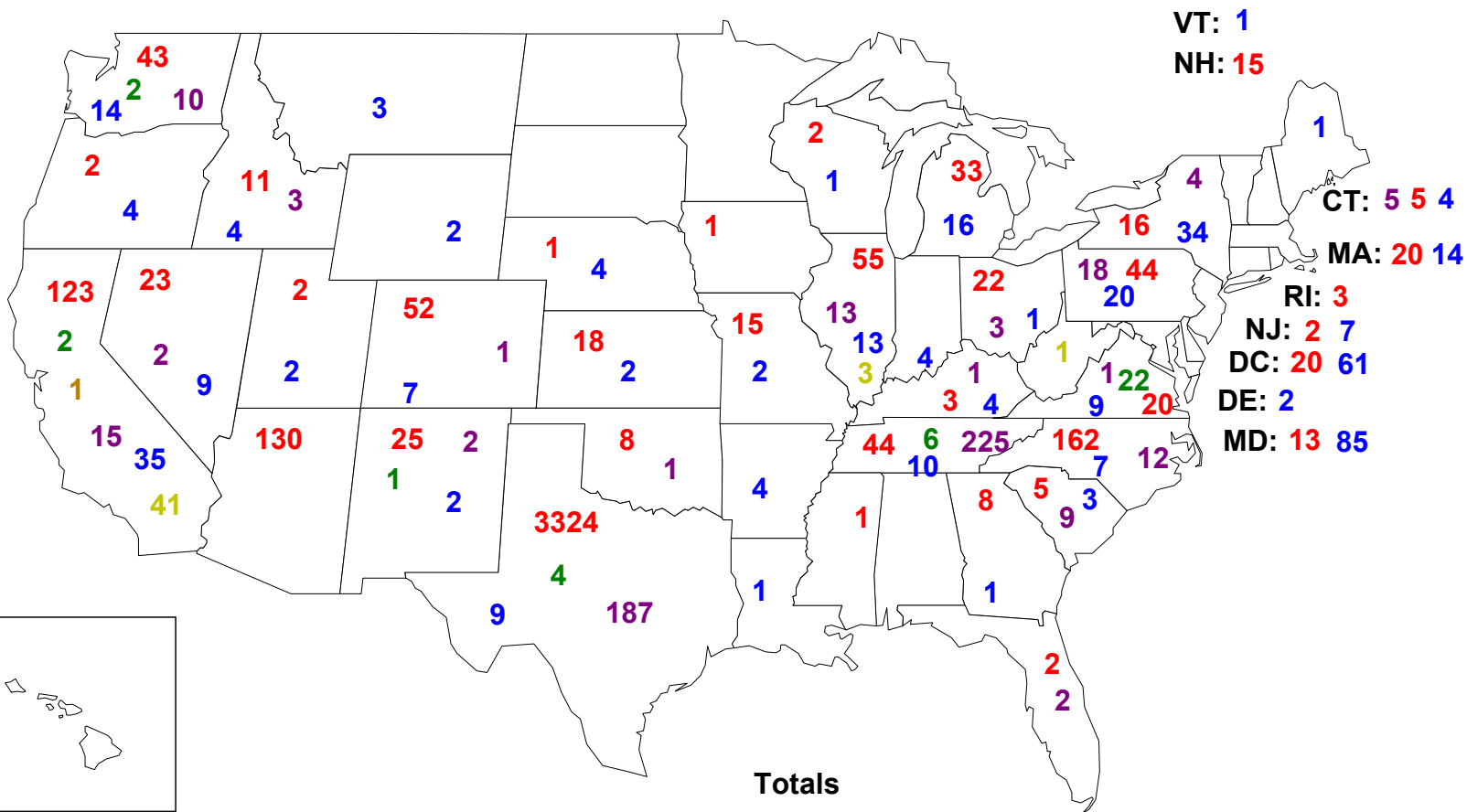
# Off-Site Source Recovery

---

- Sponsored by DOE EM-22 and DOE/AL-WMD
- Operated by Los Alamos National Laboratory
- Currently managing actinide bearing sealed sources
  - Recovery
  - Transportation
  - Storage
  - Disposal

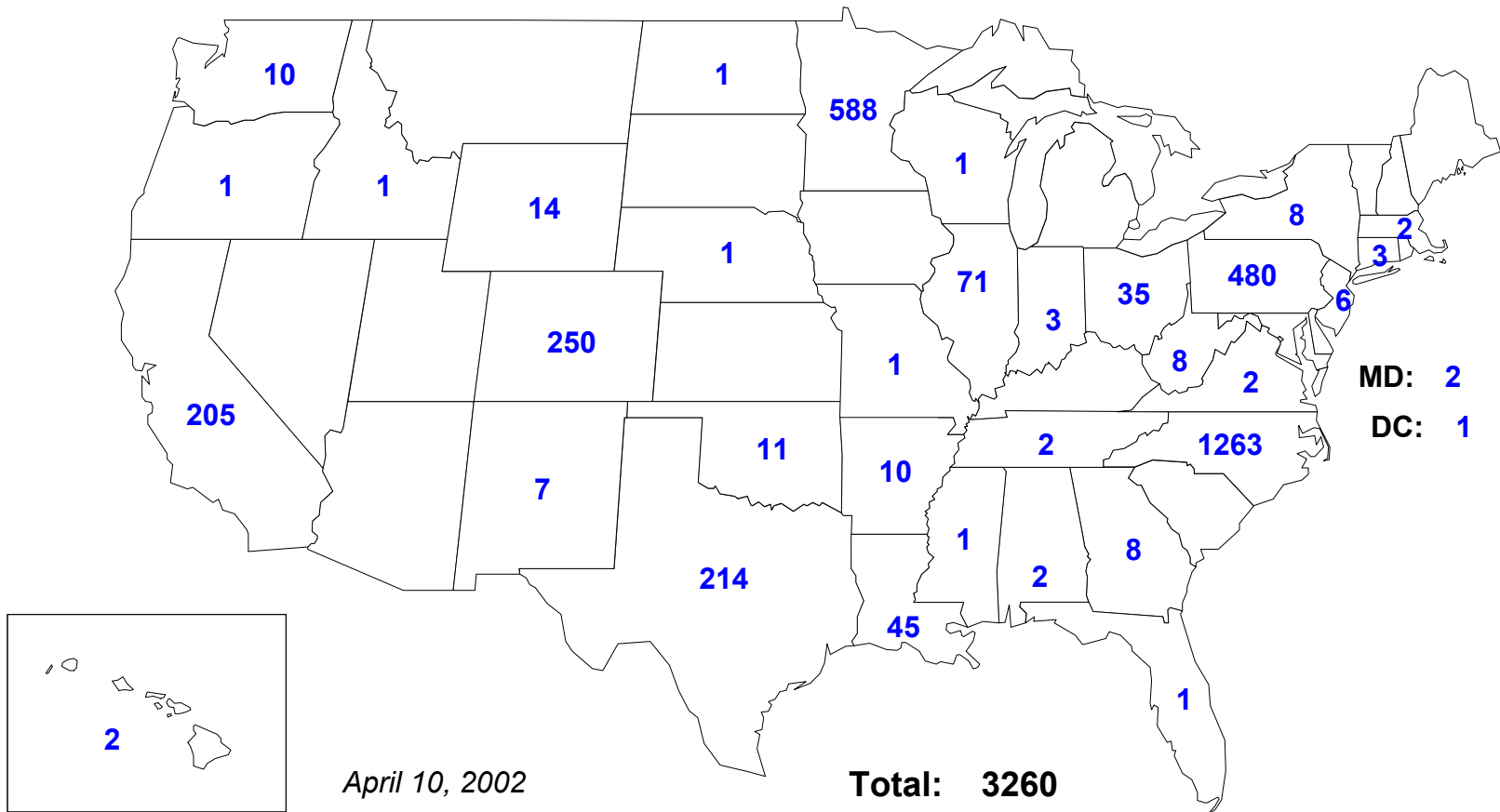
# Sealed Source Distribution by Isotope

Total Excess Sources Listed: 5299



<sup>241</sup> Am Sources	4278	<sup>238</sup> Pu Sources	514
<sup>90</sup> Sr Sources	47	<sup>239</sup> Pu Sources	414
<sup>252</sup> Cf Sources	1	<sup>244</sup> Cm Sources	45

# OSR Project Recoveries to Date





## Available Services

---

- Excess sealed source database
- OSR Project website <http://osrp.lanl.gov>
- Field assistance and recovery operations
- Placement of sources in special form capsules
- Containers for Type A and Type B shipments
- WIPP approved containers for storage and disposal



# LANL Special Form Capsule

49CFR173

DOE 1027-92





## LANL Special Form Capsule

Field assembly kit  
for LANL SFC  
includes all  
accessories  
required to safely  
encapsulate  
sources to US  
DOT Special Form  
(49 CFR 173.469)





# Standard Pipe Overpack Assembly



NRC/WIPP-approved multifunction container available for transportation, storage, and disposal.



Available for direct purchase under contracts maintained by LANL.



## Defense Sealed Sources - Disposal at WIPP

Under the LANL Transuranic Waste Certification/ Characterization Program (TWCP), the OSR Project will have a WIPP approved sealed source waste stream.



The DOE Field Office in Carlsbad has asked the OSR Project to assist small sites with their sealed source waste stream problems.

LANL-01-275D4221



# Pipe Overpack Container Options

---

- Standard Pipe Overpack Assembly
  - non-neutron emitters - Type A Limit
  - neutron emitters - approximately 10 Ci
- S-100 Pipe Component - 6 inch pipe
  - non-neutron emitters - Type A Limit
  - neutron emitters - 30-35 Ci
- S-300 Pipe Component 12 inch pipe
  - non-neutron emitters - Type A Limit
  - neutron emitters - 15-20 Ci



# WIPP Acceptance Criteria for DOE-Owned Sealed Sources

---

- LANL cannot accept materials that would require disposal under RCRA requirements
- Documented defense pedigree
- Packaging by OSR Personnel
- Packaged sources meet WIPP NDA and headspace gas requirements
- LANL TWCP certifies the waste packages
- DOE-Carlsbad provides final approval for shipment of OSR Project sealed source waste stream



## What Can We Do For You Today?

---

On a Work-For-Others reimbursable basis, the OSR Project can:

- provide assistance with historical documentation of sealed sources
- place damaged or undocumented sources in DOT special form
- package actinide bearing sources in a WIPP compliant configuration at your site for storage or transport
- accept Am-241 and Pu-238 bearing sealed sources on a case-by-case basis
- Provide specialty services in sealed source analysis, packaging, and transportation at your site

# OSR

WEB PAGE



"a solution for the 21st century"

Home	<
Operations	<
Research	<
Facilities	<
Off-Site Waste	<
Online Source Registration	<
Contacts	<
Documents	<
Useful Links	<

Register  
Sources



*OSR News*

**February 2002**

# http://osrp.lanl.gov

Los Alamos National Laboratory

Lab Home | Phone | Search

## Off-Site Source Recovery

### What is Off-Site Source Recovery?

The Off-Site Source Recovery (OSR) Project recovers and manages unwanted radioactive sealed sources and other radioactive material that:

- present a risk to public health and safety,
- present a potential loss of control by a Nuclear Regulatory Commission (NRC) or agreement state licensee.
- are excess and unwanted and are a U.S. Department of Energy (DOE) responsibility under Public Law 99-240, or are DOE-owned.

The project is sponsored by DOE's Office of Technical Program Integration (EM-22) and the Albuquerque Operations Office Waste Management Division and operates from Los Alamos National Laboratory (LANL). It focuses on the problem of sources and devices held under US Nuclear Regulatory Commission or agreement state licenses for which there is no disposal option. The project was reorganized in 1999 to more aggressively recover and manage the estimated 18,000 sealed source devices that will become excess and unwanted over the next decade. This reorganization combined three activities, the Radioactive Source Recovery Program, the Off-Site Waste Program, and the Pu-239/Be Neutron Source Project. For a copy of the OSR Project fact sheet click here ([pdf](#)).



## What's Required?

---

- Register sources on OSR Project Database and provide detailed information as specified and requested
- Contact OSR Project Office to develop recovery plan and integrated work orders, as appropriate, if priority drivers exist for accelerated recovery
- Work with OSR project staff to schedule and complete recovery



## Points of Contact

---

- Source Registration
  - Jerry McAlpin - 505-665-5795
- Tell Us Your Story
  - Shelby Leonard - 505-667-670
- Inform DOE-AL/WMD
  - Joel Grimm 505-845-5463
- General Information
  - Funding Issues - Frank Montoya - 505-665-5468
  - Containers - Jerry McAlpin - 505-665-5795

# Tritium Recovery & Recycle at the LLNL Tritium Facility

Presented to:      Second Joint NISSMG/NMFA  
                         Small Sites Needs Workshop  
                         Las Vegas, NM



April 23 - 25, 2002

J. Mark Mintz  
Tritium Facility Manager

# Facility History

- Opened in 1958
- Tritium R&D major focus until 1992
- 1992-present
  - Tritium systems design & operation continues
  - Major effort in site D&D, including tritium recovery & recycle



LLNL Tritium Facility (B331)

# Facility History, cont.

## ■ Major D&D projects:

- Tritium inventory removal project; LLNL/B331 (lead)
- KMS Fusion; Ann Arbor, Michigan (lead)
- Mound Environmental Management Project; Miamisburg, OH (support)
- SNL's Tritium Research Laboratory (968) D&D; Livermore, CA (support)

## ■ These projects presented a variety of tritium recovery/disposition “opportunities”

- Gas (including pressurized), hydrides (e.g., U, Pd, Ti), liquids (oil & water) and solid solutions (e.g. stainless steel)

# Army Tritium Recycle Project

## HISTORY:

- Initial discussions resulted in a small pilot study (mid-1997), results were used to develop processes, procedures, work station strategies, and preliminary cost.
- Multi-year contract signed in early 1998.

# Army Tritium Recycle Project, Cont.

- Received 19 drums in early 1998, most of which were “MRS” collimator light sources.
- To date over 6000 of these light sources have been disassembled and their tritium recovered & recycled.

# Incoming Parts Awaiting Inspection/Unpacking



# Recycle Parts as Received



# Inspection & Accountability of Received Parts



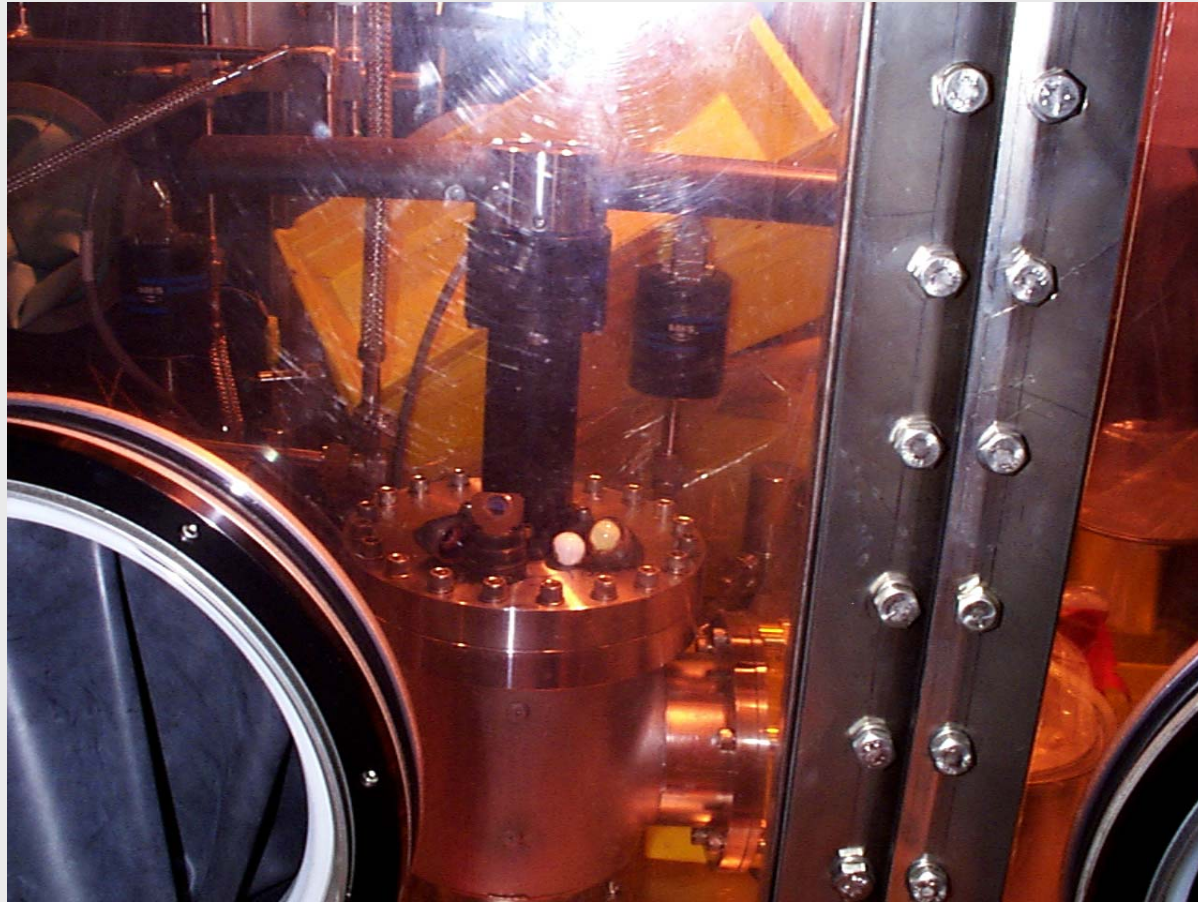
# Army Tritium Recycle Project- MRS Processing

- The light sources are then processed in batches of approximately 150.
- Process consists of: batch-loading into a fixture, where the ball is crushed, the tritium is extracted and collected, and the crushed glass and housings are retained as waste.
- Once significant quantities of tritium gas are collected, the bulk gas is analyzed by mass spectrometry.

# MRS Illumination Devices {“Eyeballs”}



# Glovebox Illumination Device Crusher



# Army Tritium Recycle - MRS Processing, Cont.

- When significant bulk gas is collected, the tritium is loaded into UC-609 shipping containers and sent to WSRC for processing.
- Current recovery rate is approximately 80+% (5.2 Ci @ 6.5 Ci/source)
- The glass shards, and metal housings are then packaged and disposed of as LLW.

# UC-609 Bulk Tritium Transport Packages



# Army Tritium Recycle - MRS Processing, Cont.

- The bulk housings are surveyed to assure they meet free release <1000 D.P.M.
- If they meet free release they are sent to salvage.
- If they DO NOT meet free release, they are packaged as waste and disposed of as LLW.
- The received shipping containers are also surveyed for free release.
- “Free release” then goes to salvage.

# Contaminated Residuals Packaging as LLW



# Follow on Projects - Private Sector Recycle

- 2001 - LLNL & DOE approval of contract for exit sign recycle.
- 2002 - negotiations underway with 2nd private supplier.



# Waste Generator Assistance and Technical Support (WATS)

Jhon T. Carilli  
Low-Level Waste Program Manager  
U.S. Department of Energy's  
National Nuclear Security Administration  
Nevada Operations Office

April 23, 2002

2<sup>nd</sup> Joint NIFSMMG/NMFA Small-Sites Needs Workshop

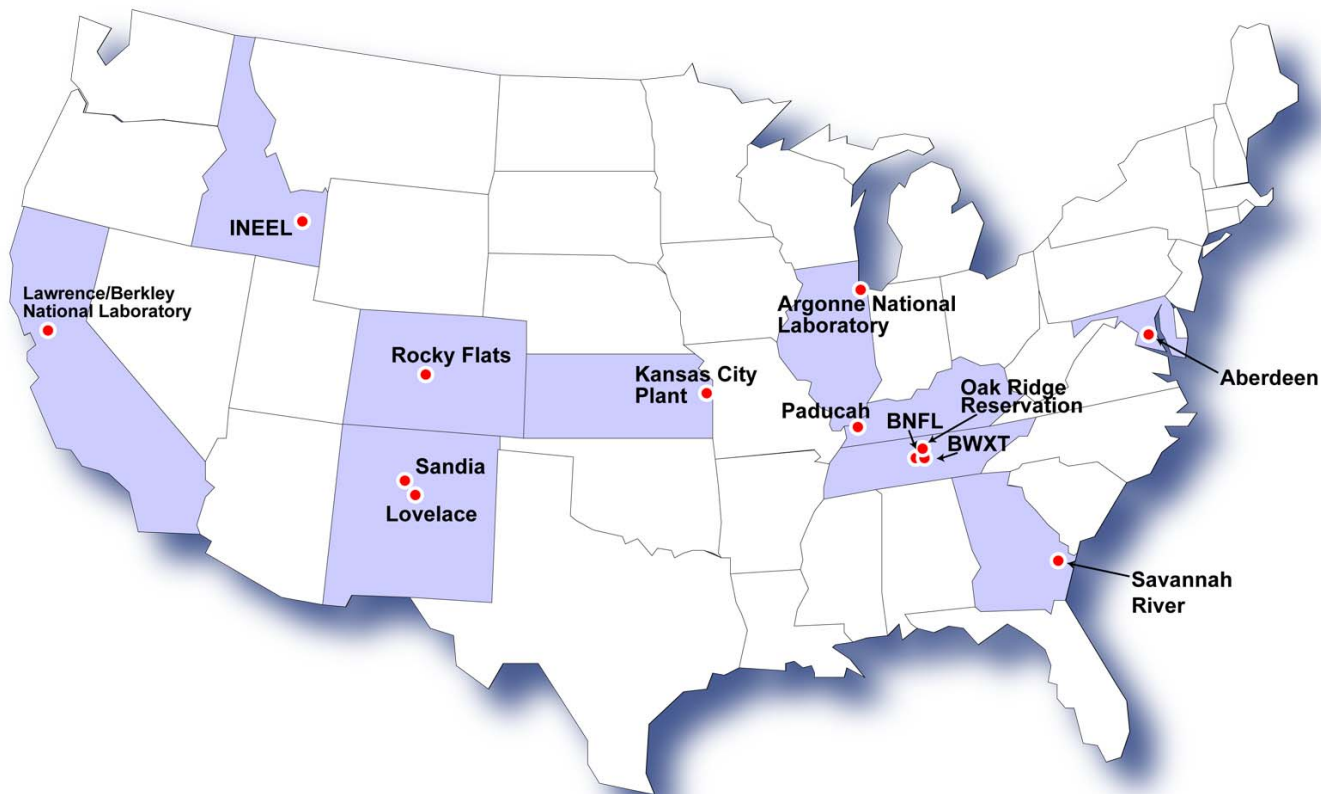
## What is WATS?

- WATS interprets the Nevada Test Site Waste Acceptance Criteria (NTSWAC) and other regulations for existing and new generators
- WATS is a *no cost* service provided by NNSA/NV to assist generators in implementing the NTSWAC
- WATS provides informal assistance. It is not an audit.

# WATS Services

- Provide preliminary review of generator documents, waste profiles, waste certification documentation, and corrective action plans
- Participate in on-site visits to generator facilities to assist in the identification and resolution of technical, programmatic, policy regulatory, and operational issues
- Assist in identifying LLW waste generator processes that can be streamlined
- Distribute lessons learned
- Act as information clearinghouse

# Generator Locations Serviced by Site Visits



## Typical Issues Identified

- Lack of flowchart to accurately depict how the generator characterizes, packages, stores, and ships waste
- Lack of crosswalk between the NTSWAC requirements and the generator's plans and procedures
- Inadequate or lax system for safekeeping of quality records

# Services Provided to New Generators

- Evaluate waste stream viability
- Assist in establishing a NTSWAC compliant program
- Brief on NTSWAC and disposal process
  - Identify possible partners for low volume generators

## WATS Team

- Task Lead:
  - Gary Pyles, NNSA/NV (702) 295-2969
- Primary Contact:
  - Leroy Duran, HAZMED (702) 295-7245
- Other Team Members:
  - Susan Krenzien, HAZMED (702) 295-1618
  - Enos Baker, HAZMED (702) 295-6861

*Idaho National Engineering and Environmental Laboratory*

# ***U. S. DOE Waste Elimination Team***

*Greg A. Hulet  
Idaho National Engineering and  
Environmental Laboratory*

April 23-24, 2002



# Summary

- *Why a Waste Elimination Team (WET)?*
- *Team Description*
- *Funding*
- *FY2002 Projects*
- *Out-Year Plans*

# ***Deployment Difficulties***

- *Need process gives impetus for research*
- *Technology is developed and demonstrated*
- *Commercial treatment facilities won't deploy without guaranteed waste streams*
- *Sites do not want to go through permitting process for small quantities of waste*

# Deployment Solutions

- *Deploy technologies through combined treatment campaigns*
- *Convince private sector of market*
- *Reduce costs through economies of scale*
- *Share experience to help with permitting and onsite deployments (ASTD)*

# ***Waste Elimination Team (WET)***

- *Site waste management personnel*
- *Principal investigators for deployments*
- *TMFA regulatory personnel*
- *TMFA technical personnel*

# ***WET Responsibilities***

- *Supply information on deployment needs*
- *Supply data for treatment campaigns*
- *Prepare and ship waste*
- *Fund treatment of site's waste*
- *Provide priorities for out-year deployments*

# ***Integrated Contractor Procurement Team (ICPT)***

- *Established in 1995*
- *Aggressively pursue consortium buying opportunities*
- *Provide long term procurement strategies*
- *Provide procurement communication vehicle*

# ***Elemental Mercury***

- *Small quantities of elemental mercury made deployment expensive*
- *Economies of scale for combined treatment campaign*
- *PI has experience working with Broad Spectrum contract*
- *Mercury will be treated at Materials & Energy Corporation*

# ***Mercury Soil and Sludge***

- *Combined treatment campaign to eliminate small waste streams of sludge and soil*
- *PI will create combined profile*
- *Team will coordinate shipments*
- *Waste may treated by M&EC (Broad Spectrum) but options under consideration*

# ***Organic Liquids with Mercury/Pu***

- *SAMMS will immobilize mercury and actinides*
  - *Separate from liquid - eliminate liquid*
  - *Stabilize with SAMMS in matrix - dispose*
- *SAMMS being deployed on site-by-site basis*

# ***Organic Liquid Stabilization***

- *NoChar product stabilizes organic liquids*
- *Chamberlain Group funded via ASTD to assist sites in deployment*
- *Discussions with treatment facilities for deployment if there is a market*
- *Testing to determine long-term properties of stabilized material*

# ***Uranium Chip Deployment***

- *Uranium chips selected because of universality*
- *Contract is accessible by all sites (BOA)*
- *Permafix/M&EC is vendor*
- *Preparations for first article test underway*
- *Dreams of future are forming*

# Gas Cylinders

- *Vendor will treat gas cylinders including UF6 at central facility*
  - *Vendor will inventory cylinders at sites*
  - *Site will ship cylinders for treatment*
- *Integrated Environmental Services has contract*
- *WET will assist in deployments*

# ***Lead Acid Batteries***

- *TMFA established regulatory framework*
- *WET reviewing of macroencapsulation contracts*
- *Ohio will supply first article test waste*
- *WET will advise on subsequent deployments*

# ***Classified Configuration***

- *Teaming with Recycling Center*
- *Sort and decontaminate classified shapes*
- *Concentrated TRU stream sent to WIPP*
- *Metals recycled to shield block*
- *LLW sent for disposal*
- *Oak Ridge will direct off-site treatment*

# ***Thermal Treatment***

- *WET inventorying waste requiring thermal treatment during FY2002*
- *PI will investigate existing contracts for thermal treatment*
- *PI will place or modify contract if needed*
- *WET will conduct treatment campaign*

# ***Reactives Phase II***

- *WET is surveying the reactives requiring treatment for the DOE complex*
- *WET will determine groupings of reactives*
- *WET will establish contract for treatment of at least one grouping of reactives in FY2002*

# ***Macroencapsulation***

- *Qualifying new containers for direct macro from D&D other activities*
  - *Cylindrical poly container first*
  - *Poly boxes in planning stages*
- *Work underway with EPA to allow macro of Hg and Cd batteries and lead in debris*

# ***Tritium Contaminated Waste***

- *WET/FIU is defining the DOE inventory*
- *WET/FIU will investigate options for treatment*
- *Plans will be laid for out-year treatment or development efforts*

## **TRU Issues**

**Objective:** Provide technical assistance to sites in the disposition of their TRU wastes.

**Problem Description:** Typically SQSs no longer have DOE missions and must disposition their TRU wastes prior to closure. These sites may require technical, regulatory, and/or administrative assistance in achieving waste disposition. If waste disposition is not accomplished in a timely fashion, closure schedules will be pushed out.

**Project Description:** The TRU WET will identify an appropriate team to provide assistance in resolving each site's issues. Assistance may include technical expertise, support in seeking regulatory change, deployment of technologies.

# TRU Issues

## Project Status:

- Site visit made to Energy Technology Engineering Center
  - Regulatory support: PCB issues, 10-160B cask
  - Characterization: AK based - have spectra that may augment AK package
  - QA: what will satisfy AK based program
- Contact made with LANL SQS documentation effort
- Discussion with ANL-E regarding University of Missouri waste
- SQS TRU waste conference calls coordinated by Mound (DOE SQS Representative on Corporate Board)

# Out-Year Priorities

- *TMFA has budgeted \$2.5 M for out-year deployments*
- *Direct support to closure sites for waste disposal*
- *WET has prioritized the deployments on which that money will be spent*
- *ASTD and other funding sources are questionable*

# ***Closure Site Support***

- *WET PI's will assist closure sites in disposing of waste streams*
- *WET will provide technical assistance to define closure site problems*
- *Structure remains to be determined*

# Oversize Components

- *Joint project - LANL, Nevada, LLNL*
- *Prepare path for shipment of oversize boxes from NTS and LLNL to LANL*
- *Determine disposal path for oversize spheres*
- *Waste size-reduced and prepared for WIPP at DVRS in out-years*
- *Selected for FY03 funding*

# Sealed Sources

- *Closure and other sites require assistance in eliminating sealed source inventories*
- *WET plans to supplement NISSMG scope with assistance in disposal*
- *Scheduled for FY03*

# Conclusion

- *Combined efforts of sites with similar wastes will expedite deployment of demonstrated technologies and subsequent treatment of legacy waste*
- *WET will provide technical and monetary assistance to make the deployments possible and effective????*
- *Premature retirement is a possibility*

## Unique Waste Project Contacts

Waste Elimination Team Greg Hulet INEEL (208) 526-0283 [hag@inel.gov](mailto:hag@inel.gov)

Elemental Mercury Lynn Schwendiman INEEL (208) 526-8732 [YLS@inel.gov](mailto:YLS@inel.gov)

Mercury Solid Waste Lynn Schwendiman INEEL (208) 526-8732 [YLS@inel.gov](mailto:YLS@inel.gov)

Organic Liquids with Mercury/Pu Thomas Klasson ORNL (865) 574-6813  
[klassonkt@ornl.gov](mailto:klassonkt@ornl.gov)

Organic Liquid Stabilization Dick Govers Chamberlain Group/Mound (434) 384-3930  
[rgovers@chamberlaingroup.net](mailto:rgovers@chamberlaingroup.net)

Uranium Chip Treatment Juan Ferrada ORNL (865) 574-4998 [ferradaji@ornl.gov](mailto:ferradaji@ornl.gov)

Gas Cylinders Mike Morris ORNL (865) 574-0559 [imi@ornl.gov](mailto:imi@ornl.gov)

Lead Acid Batteries Mike Morris ORNL (865) 574-0559 [imi@ornl.gov](mailto:imi@ornl.gov)

Classified Material Mike Morris ORNL (865) 574-0559 [imi@ornl.gov](mailto:imi@ornl.gov)

Metals Recycling Richard Meehan DOE ORR (865) 576-2598 [meehanrw@oro.doe.gov](mailto:meehanrw@oro.doe.gov)

Thermal Treatment Steve Reese INEEL (208) 526-0070 [reessj@inel.gov](mailto:reessj@inel.gov)

Reactives Phase II Susan Carson Sandia (505) 845-8713 [sdcarso@sandia.gov](mailto:sdcarso@sandia.gov)

Macroencapsulation/Regulatory Issues Tim Carlson (Dave Eaton) INEEL (208) 526-8062 [dle@inel.gov](mailto:dle@inel.gov)

Tritium-Contaminated Waste Peggy Shoffner FIU (865) 220-8361 ext. 110  
[shoffner@hcet.fiu.edu](mailto:shoffner@hcet.fiu.edu)

Oversize Boxes Ed Hohman NTS (702) 295-3798 [hohmaneh@nv.doe.gov](mailto:hohmaneh@nv.doe.gov)

TRU Waste Whitney St. Michel INEEL (208) 526-3206 [whitney@inel.gov](mailto:whitney@inel.gov)

Beryllium Shielding Gary Anderson INEEL (208) 526-4669 [gar@inel.gov](mailto:gar@inel.gov)

NISSMG Gary Polansky (SNL) (505) 845-7029 - [gfpolan@sandia.gov](mailto:gfpolan@sandia.gov)

*Idaho National Engineering and Environmental Laboratory*

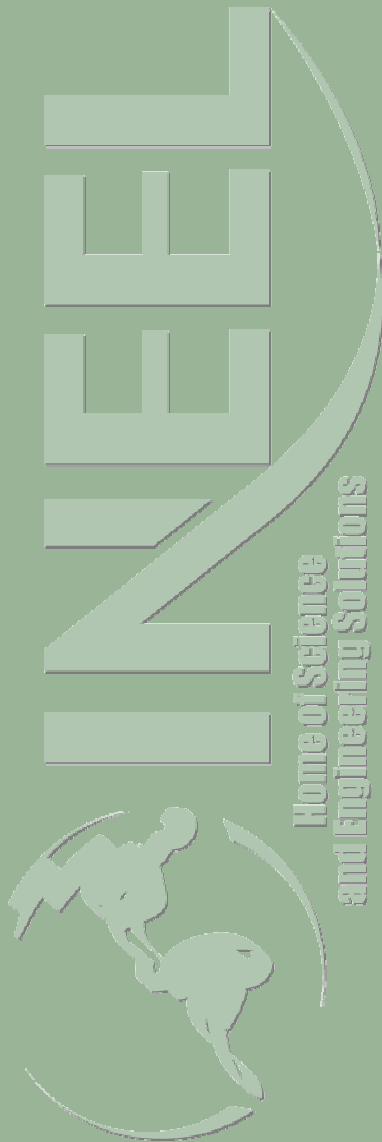
# ***Regulatory Initiatives***

---

***Tim Carlson  
TRU & Mixed Waste Focus Area***

---

*April 23-24, 2002*



# ***Regulatory Approach***

- *Identify mixed waste treatment/disposal challenge*
- *Assess opportunities for regulatory intervention*
- *Identify site, DOE and/or regulatory players*
- *Build consensus on appropriate solution*
- *Formalize solution through permits, variances, agreements*

## ***Example Projects***

- *Projects in support of unique waste disposition*
  - *Radioactive lead acid batteries*
  - *Radioactive Hg/Cd batteries*
  - *Macro containers*

# ***Identification of Issues***

- *EPA-DOE MOU*
- *EPA OSW available to work DOE issues*
- *Working with sites to identify regulatory issues preventing/impacting disposition of mixed wastes*
- *Developing a prioritized list of regulatory issues to discuss and work with EPA*

# Presentations by Sites

# Excess Radioactive Materials at Ames Laboratory



The Ames Laboratory is headquartered in the Technical and Administrative Services Facility on the north end of the ISU campus.

Jay Beckel  
Radiation Safety Officer

# History

- Housed on the Iowa State University Campus
- Former site for pool type research reactor
- Uranium purification for Manhattan Project
- Thorium purification
- Materials Preparation Center

# Types of Sources Available

- 2 Neutron sources
- 1 large Cs calibration source
- Several small calibration/check sources
- Several kg of Th and U in various forms

# High Priority for Disposition

- 1 Ci PuBe neutron source
- 2.15 Ci AmLi neutron source – unknown form of Li
- 9.4 Ci Cs-137 calibration source

# Example of Source Inventory

<u>Source</u>	<u>Isotope</u>	<u>Location</u>	<u>Activity</u>	<u>Quantity</u>
Calibration Source	Cs-137	WHF	9.4 Ci	1
Neutron	Pu-Be	B53 SPH	1 Ci	1
Neutron	Am-Li	B53 SPH	2.15 Ci	1
Calibration Source	Ra-226	WHF	9.8 mCi	1
Misc. check source	Sr-90	WHF	~.06 uCi	6
Calibration/Check Source	Ni-63	B53 SPH	10 mCi	1
Calibration/Check Source	Cs-137	B53 SPH	.9 uCi	1
Calibration/Check Source	Nb-94	B53 SPH	.0034 uCi	1
Calibration/Check Source	Nb-94	B53 SPH	.21 uCi	1
Calibration/Check Source	Cs-137	B53 SPH	8 uCi	1
Calibration/Check Source	Co-60	B53 SPH	.1 uCi	2
Calibration/Check Source	Ra-226	B53 SPH	.05 uCi	1
Calibration/Check Source	Cs-137	B53 SPH	8 uCi	1

# **Overview of the Brookhaven National Laboratory Small Sites Needs Workshop April 23-25, 2002**



**Kathy Carney, WMD Division Manager**  
**Diane Rocco, WMD Project Controls and Admin. Mgr.**  
**Waste Management Division**

# Brookhaven National Laboratory

*A multi-program national laboratory with a broad mission of basic and applied research in a variety of scientific fields: Physics, Chemistry, Materials Science Biology, Medicine and forefront technology*

EXPLORING EARTH'S MYSTERIES  
...PROTECTING ITS FUTURE

**Operated by Brookhaven Sciences Associates (BSA) for DOE**  
**3000 employees; 4,000 visiting scientists annually**  
**5,000 acre site located on eastern Long Island, NY**

# BROOKHAVEN NATIONAL LABORATORY



managed by Brookhaven Science Associates  
for the U.S. Department of Energy

## Environmental Management System

Successfully audited by an  
independent accredited organization,  
and registered to  
International Standard ISO 14001.

### BNL REGISTERED FACILITIES

- BIOLOGY DEPARTMENT
- BROOKHAVEN LINAC ISOTOPE PRODUCER AND  
TARGET PROCESSING LABORATORY
- COLLIDER-ACCELERATOR DEPARTMENT
- ENVIRONMENTAL RESTORATION DIVISION
- MEDICAL DEPARTMENT
- REACTOR DIVISION
- SUPERCONDUCTING MAGNET DIVISION
- WASTE MANAGEMENT DIVISION

*First Long Island-based organization  
First DOE National Laboratory*



EXPLORING EARTH'S MYSTERIES  
...PROTECTING ITS FUTURE

# Major Facilities and Programs

---

- Relativistic Heavy Ion Collider (RHIC)
- National Synchrotron Light Source (NSLS)
- Alternating Gradient Synchrotron (AGS)
- Accelerator Test Facility
- Tandem Van de Graff
- Nuclear and high-energy physics
- Physics and chemistry of materials
- Environmental and energy research
- Nonproliferation
- Neurosciences and medical imaging
- Structural biology
- Environmental cleanup



RHIC

BOOSTER

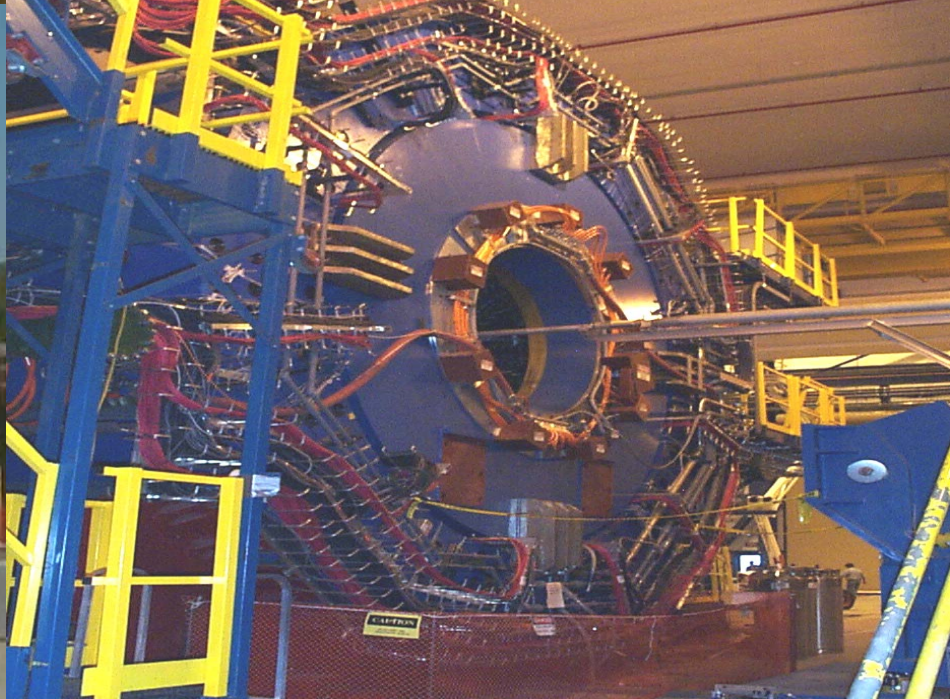
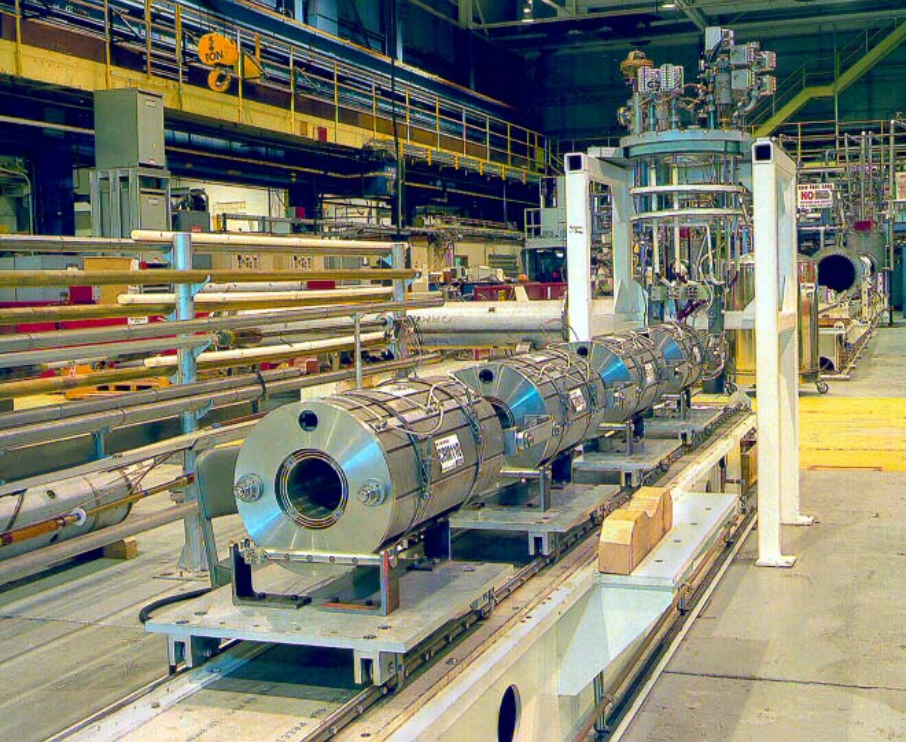
BOOSTER  
APPLICATIONS  
FACILITY

g-2

LINAC

AGS

TANDEM



# Research Activities



## SIGNIFICANT ASPECTS:

- Regulated Industrial Waste
- Hazardous Waste
- Radioactive Waste
- Mixed Waste
- Medical Waste
- Regulated Medical Waste
- Radioactive Material Use
- Chemical Storage/Use



# Brookhaven LINAC Isotope Producer & Target Processing Laboratory



## SIGNIFICANT ASPECTS:

- Regulated Industrial Waste
- Hazardous Waste
- Radioactive Waste
- Mixed Waste (TPL)
- Atmospheric Discharges
- Liquid Discharges
- Radioactive Material Storage/Use
- Soil Activation (BLIP)



# Life Sciences



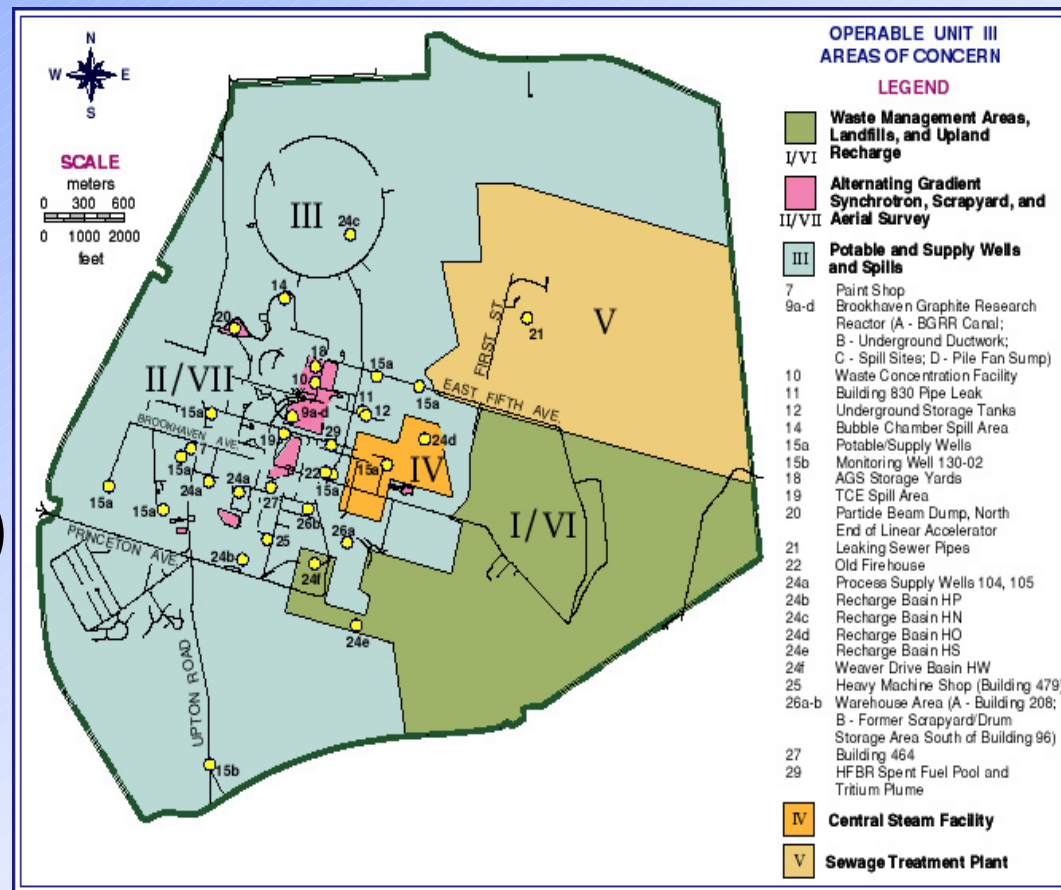
## SIGNIFICANT ASPECTS:

- Radioactive Waste
- Hazardous Waste
- Regulated Medical Waste
- Chemical Storage/Use

# Environmental Restoration Activities at BNL

## Major Initiatives

- Groundwater Remediation
- Surface Remediation and D&D
- Brookhaven Graphite Research Reactor (BGRR) Decommissioning
- Peconic River Cleanup









# EMS Overview of WMD

---

## **WMD Mission:**

To provide the Brookhaven National Laboratory with Waste Management Services (i.e.: pickup, storage, processing, packaging, off-site disposal) for hazardous, low level radioactive (solid & liquid), and mixed wastes in a professionally responsible and regulatory compliant manner.

# EMS Overview of WMD

---

## ■ WMD consists of:

- **The Waste Management Facility (WMF): a Category 3 Non-Reactor Nuclear Facility**
  - Subject to stringent QA requirements
  - Safety Analysis Report (SAR)
  - Is NYS-Permitted Hazardous Waste Storage Facility
- **Includes other Radiological Facilities (bldgs. 802B, 810/811,)**
  - Preliminary Hazard Analysis (PHA's) & Authorization Agreements (AA)
- **Inactive facilities (HWMF, bldg. 650A)**
  - Basis of Interim Operation (BIO) & (AA)

# Waste Management Facility

---



# WMD Overview

---


Current funding of \$6M supports:

- Collection, storage, treatment and disposal of 100 MT haz/ind waste, 150 m3 LLRW and 25 m3 liquid LLW
- 22.8 FTE, including bargaining unit work force
- Operations/regulatory compliance
- Non SC and non-routine wastes paid for directly (restoration, construction, lab-cleanout)
- Use a waste allocation system to control costs
- Infrastructure documentation includes: Certification program, Rad. Waste Management Basis Doc., Standards Based Management System (SBMS), SBMS Waste Subject Area's, Characterization Guidance Doc., etc.

# BNL Site Issues and Needs

---

- Funding issues – Present and out years
- Waste allocation/cost recovery program
- Cost reduction strategies
- Benchmarking against other DOE lab WM programs
- Lingering responsibilities at former facilities
- Long-term source stewardship strategies
- Mixed waste management issues
- Difficult to dispose of wastes
- Transition to external regulation
- P2 technologies in cleanup effort Funding



# BROOKHAVEN

## NATIONAL LABORATORY



# The Kansas City Plant

- ⌘ Managed and operated by Honeywell, Federal Manufacturing and Technologies
- ⌘ Consists of 3 million square feet
- ⌘ Employees 2800 scientists, engineers, technicians and support personnel



# Honeywell Products & Services



## TRANSPORTATION SAFEGUARDS



## DOE FINAL ASSEMBLY PLANT

## KANSAS CITY PLANT Managed and Operated by Honeywell

- Manufactures 85% of DOE weapon products and 40 product families.
- Ships over 73,000 packages annually.

- Logistics Center
- Military Field Support
- Testing and Analysis
- Security Training
- Industrial Partnerships

## NATIONAL LABORATORIES

Federal Manufacturing & Technologies

Honeywell

Illustration By: J. E. Briggs

# Sources of Radiation

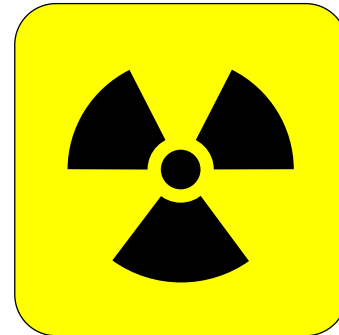
## ⌘ Radiation Generating Devices

- ☑ Industrial x-ray
- ☑ Neutron generators

## ⌘ Sealed Sources

- ☑ Calibration
- ☑ Analytical instruments

## ⌘ Depleted Uranium Processing Operation



# Low-level Radioactive Waste

## Streams

- ⌘ Solidified DU etching bath
- ⌘ Solid debris/trash
- ⌘ Solidified LSC counting cocktail
- ⌘ Radioactive sources
  - ☒ Smoke detectors
  - ☒ Sealed sources

## Management

- ⌘ 14 drums in storage
- ⌘ Generate 2.5 drums/yr
- ⌘ One accumulation drum
- ⌘ Plan to ship to NTS in 2006

# Issues & Needs - Radioactive Source Drum

- ⌘ Sealed/plated

- ⌘ Isotope and activity

  - ☑ uCi to mCi

  - ☑ Bi-210, Cd-109, Co-57, Co-60, H-3, Pm-147,

  - ☑ Ra-226, U-238, Tl-204, Cs-137, Pu-239

  - ☑ More on list

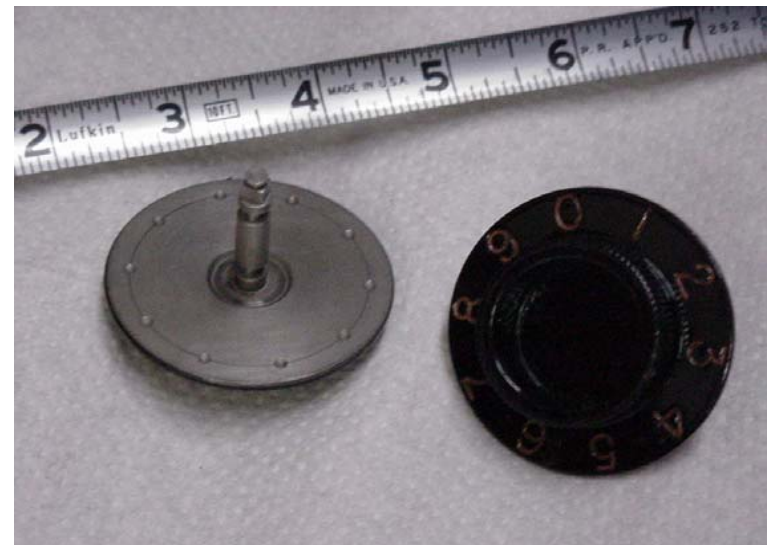
- ⌘ Smoke detectors

# Issues & Needs - Accumulation Drum

3M Static Meter  
Model 703  
200 mCi of Tritium  
@1975

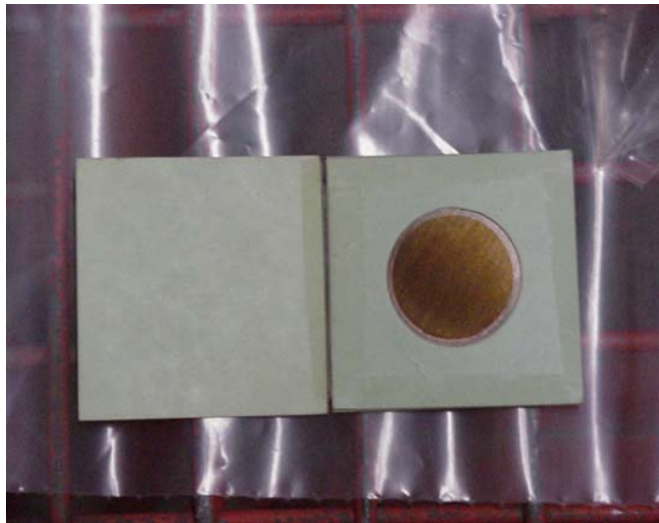


Seventy dials with  
tritium phosphor  
paint



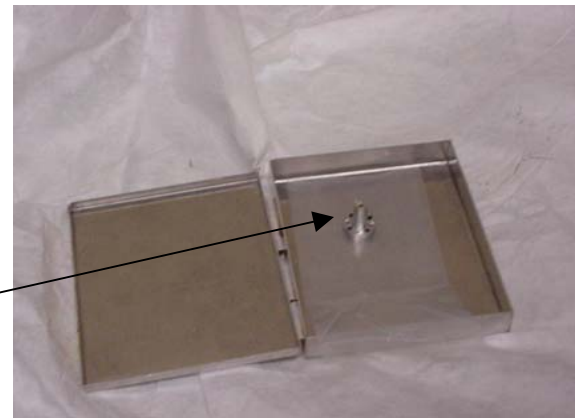
# Issues & Needs - Accumulation Drum

## Unknown Alpha Source



# Issues & Needs - Accumulation Drum

- Controlatron probe
  - tritium source
- Beta backscatter sources
  - Sr-90
  - Box of apertures
- Pm-147 sources
  - 100 mCi @12/6/85
  - Source holders
- Bottles of  $\text{ThO}_2$  and  $\text{U}_3\text{O}_8$



# Issues & Needs - Curing Oven

- ⌘ Large electrical curing oven - still works
- ⌘ 8''(L) x 6ft''(W) x 7''(H)
- ⌘ Located in stockpile management reduction initiative (SMRI) area
- ⌘ One year to remove from area



# Issues & Needs - Curing Oven

- ⌘ Depleted Uranium contamination (fixed)
- ⌘ Beryllium contamination
- ⌘ No asbestos
- ⌘ No hazardous waste issues from paint



# Issues & Needs - Summary



- ⌘ Recycle or other use for sources in accumulation drum and radioactive source drum
- ⌘ Contaminated curing oven
  - ☑ Additional surveys
  - ☑ Dismantle
  - ☑ Prepare for storage or shipment



# Lawrence Berkeley National Lab Waste Management Issues

Presented by

Nancy Rothermich

Waste Management Group Leader

April 23-25, 2002



# Berkeley Lab Issues

- Sources
- Disposal of Cf-249 mixed waste
- Activated Hg (both organic and elemental)
- Uranium/Thorium wastes
- Activated PCB capacitors and ballasts
- Uranium mill tailings
- TRU waste



# Sources

- Berkeley Lab has numerous excess neutron sources.
- Sources may have one of three destinations
  - LANL/OSRP
  - Return to manufacturer
  - TRU waste



# Cf-249 Mixed Waste

- 9-55 gallon drums of incinerator hearth ash containing 1.5 pCi/g Cf-249
- Envirocare license doesn't permit Cf-249
- In storage pending opening of NTS/Hanford mixed waste disposal site.



# Activated Mercury

Funding is available until end of FY 2003

## Elemental Mercury

- Primarily H-3 and Co-60
- 55 Kg

## Organic Mercury

- 2.4 liters
- >260ppm Hg
- Primarily Am-241, H-3, U-238



# Uranium chips

- Funding is available until the end of FY 2003.
- Scheduled for the first article test at Permafrix.
- 20 Kg of Uranium chips and foils
- 9 Kg of Uranium/Thorium metal plates
- 3 Kg of Thorium chips and foils
- Depleted Uranium blocks



# Uranium Blocks





# PCBs

Capacitors and Ballasts are activated

- Funding is available until the end of FY 2003
- 110 gallons
- Currently being profiled to WCS, but oil may have PCBs
- Isotopes:
  - Co-60  $\sim 0.2 \mu\text{Ci}$
  - Na-22, Sb-125, Co-57



# Uranium mill tailings

- Funding is available until the end of FY 2003.
- Currently working with WCS on profiling
- May be an issue with WCS license to accept these tailings.
- 140 gallons



# TRU Waste

- Currently working with LLNL to transfer existing inventory of TRU waste to LLNL.
- Approximately 2 cubic meters total, small amount is mixed waste.
- AK package is at WIPP for approval.
- To be certified using the mobile certification system while at LLNL.
- Roadblock: may require a LLNL permit modification to accept the mixed TRU waste at LLNL.
- Backup plan: retain the TRU mixed waste at Berkeley lab.

---

# **LLNL B251 Inventory Reduction**

---

**Second Joint NISSMG/NMFA  
Small Sites Needs Workshop**



**April 25, 2002**

**Dennis P. Barrett  
Program Manager  
Packaging And Transportation Safety**

Work performed under the auspices of the U.S. Department of Energy  
by University of California Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.



# **LLNL B251 Risk Reduction**

---

- **Reduce Radioactive Materials Inventory**
- **Remove Inventory to Below Category 3 Level**
- **Target to Remove 70% of Inventory (by curies) by 9/30/02**
- **All Inventory Removed by 9/30/03**



# **LLNL B251 Risk Reduction**

---

- **Authorization Basis Documents Almost in Place**
- **Budget Secured for FY02**
- **Organization, Staffing for Operations Nearly Complete**
- **Disposition Paths Identified for 95% of Inventory Items**
- **Negotiations Underway with Receiving Sites**
- **Complete History of Each Individual Item (accountable) has been Performed and Detailed Review of Supporting Data (i.e., Logbooks, etc.)**



# **LLNL B251 Inventory Reduction**

---

- **Issues**
  - **Need to Finalize Negotiations with Receiver Sites as to the Details Necessary to Ship Material to Sites**
    - **Shipper/Receiver Agreements, as necessary**
    - **Shipment Authorizations or Approvals**
    - **Details of Information Required to Ship Material to Receiving Sites**

# **LLNL B251 Inventory Reduction Program**

---



**Dennis P. Barrett**

**(925) 423-5132**

**Barrett2@llnl.gov**

# Tritium Facility Waste Issues

Ward Rupprecht, Facility Operator  
(505) 665-7335/[rupprecht@lanl.gov](mailto:rupprecht@lanl.gov)

Al Stadelmaier,  
Waste Management Coordinator  
(505) 667-9746/[afs@lanl.gov](mailto:afs@lanl.gov)

# Los Alamos Tritium Facilities

- Weapons Engineering Tritium Facility
- Tritium Science Fabrication Facility
- Tritium Science Test Assembly
- High Pressure Tritium Facility

# High Pressure Tritium Facility

- Inactive Radiological Facility awaiting D&D
- Contaminated items
  - Metal Hardware
  - Molecular Sieves
- Hazardous and mixed waste

# Tritium Science Fabrication Facility (TSFF)

- Active Nuclear Facility (supports NTTL)
- Contaminated items
  - Metal Hardware
  - Molecular Sieves
- Hazardous and mixed waste

# Tritium Science Test Assembly (TSTA)

- Nuclear Facility awaiting D&D
- All bulk T2 gas has been off-loaded to WETF and SRS
- Special Shipping Containers were developed at LANL to ship items that were too large for calorimetry to TA-54 Waste Storage Area

# Weapons Engineering Tritium Facility (WETF)

- Active Nuclear Facility
- Contaminated Parts
  - Metal Hardware (including classified)
  - Hazardous and mixed waste
  - Security Issues

# WETF

- Legacy Items
  - Large Containers of Unknown Items
  - Lack of Storage Area for these Containers in the Facility
  - Possible Solutions
    - Portable gloveboxes
    - Glovebags
    - Various methods of characterization

# WETF

- Legacy Items too Large for Calorimetry
  - Uranium Beds
  - Other Metal Beds
  - Catalytic Reactors

# Items from offsite

- Tritium Contaminated hardware from inactive tritium facilities around the country
- Animal Droppings
  - Hanta Virus
  - Tritium Contaminated

# Disposal Issues

- LANL procedures
- TA-54 acceptance criteria
- High level waste
- Classified Parts
- Mixed Waste

# ***Disposition Program at Los Alamos National Laboratory (LANL)***



**Presented to NMFA Small Needs  
Workshop**

---

**Bill Haag  
April 23, 2002  
Las Vegas, NV**



## ***Disposition Program at LANL***

---

- Los Alamos National Laboratory (LANL):
  - ❖ Established in 1943 (Manhattan Project)
  - ❖ Occupies 43 Square Miles
  - ❖ Consists of 32 Technical Sites or Areas
  - ❖ ~60 NM Material Balance Areas (Cat I to Cat IV)
  - ❖ Supports a broad science and technology base.



## ***Success Story: Disposition of HEU Material At LANL***

---



**Items LANL Was Able to Disposition in  
in the Last Year:**

- ❖ **HEU carbide items,**
- ❖ **Excess HEU Disposition Material,**
- ❖ **Omega West Reactor Fuel Rods**



## ***Disposition of HEU Material at LANL.***

---

Projected Material to Be Shipped Next Year;

- **Other HEU Items Identified for Disposition**
- **Bldg 164 Legacy Materials (consists of metals oxides and contaminated parts).**



## ***Further Items Identified for Disposition at LANL Awaiting Disposition Paths***

---

- Pu Contaminated U items
- Classified DU Shapes
- Odd Isotopes (eg. Th, Be)
- Sealed Neutron Sources
- Contaminated Precious Metals (ex. Platinum Items)
- <10% EU assay residues
- Surplus Material stored at TA-55 (Fuel grade PU)
- Newly Identified HEU Items (Metal and Oxide)

**DOE Nuclear Materials Issues Support  
Workshop  
April 23 - 25, 2002  
Las Vegas, NV**

**Nuclear Material Disposition  
Oak Ridge National Laboratory**

**Lance J. Mezga**

# ORNL's Waste Management Resources

- **Laboratory Waste Services – waste characterization, packaging, and certification.**
- **Bechtel Jacobs Company – waste treatment, storage, and disposal.**
  - **WESKEM – solid waste operations.**
  - **Duratek – liquid/gaseous waste operations.**
  - **Other support contractors.**
- **ORNL is currently undergoing transition of management of newly generated waste from the EM M&I to SC.**

# Radioactive Waste Management Process

- **All LLW and TRU waste generated by ORNL is certified to BJC waste acceptance requirements.**
- **Virtually all LLW and TRU waste is placed in storage by BJC in anticipation of disposal.**
- **ORNL is moving towards obtaining NTS approval.**
- **TRU waste will be certified to WIPP WAC on a staggered schedule and ultimately disposed of in WIPP.**

# **FY 2002 LLW Generation Forecast (m<sup>3</sup>)**

- **Dry Active LLW ... 391.1**
- **Biological LLW ... 12.6**
- **Radioactive Scrap Metal ...231.9**
- **LLW Construction Debris ... 7.6**
- **Soils ... 110.9**
- **Non-Regulated Chemicals and Labpacks ... 6.3**
- **CAA-Regulated Asbestos LLW ... 78.4**
- **Uranium Oxide ... 0.8**

# **FY 2002 LLW Generation Forecast (m<sup>3</sup>)**

- **Organic Liquid LLW ... 2.2**
- **Sludges and Treatment Residues ... 20.4**
- **Resins and Trapping Materials ... 25.4**
- **Special LLW ... 5.1**
- **Sealed Radioactive Sources ... 0.3**

# **FY 2002 TRU Waste Generation Forecast (m<sup>3</sup>)**

## **CH TRU Waste**

- **Debris Resulting From Hot Cell Operations ... 2.9**
- **Debris Resulting From Analytical Laboratory/Glovebox Operations ... 2.7**
- **Debris Resulting From Major Maintenance ... 21.8**
- **Debris Generated From LLW Tank Sampling and/or Remediation Activities ... 10.8**

## **RH TRU Waste**

- **Debris Resulting From Hot Cell Operations ... 5.8**
- **Debris Resulting From Major Maintenance ... 7.9**

# Problem Wastes

- **TRU Waste**
  - **Non-Defense TRU**
  - **High neutron field CH and RH TRU**
- **RH LLW (“Special” Waste)**
- **Sources**

# CH & RH TRU Waste

- **Both CH and RH TRU waste contain Cf 252 (high neutron emitter).**
- **High neutron fields associated with the waste make NDA difficult because of interference problems.**
- **Analysis vs. Acceptable Knowledge.**

# **RH LLW – “Special” Wastes**

- **Wastes do not represent a large volume of the LLW generated at ORNL but present “special” management problems.**
- **Wastes include**
  - **HFIR control plates (up to 1,000,000 R/hr).**
  - **Other reactor components (100,000’s R/hr).**
  - **Irradiated metal specimens (5 – 10 R/hr).**
  - **Chips from machining irradiated metal (up to 10,000 mR/hr).**
- **Wastes present handling, packaging and transport, and disposal site operational issues and, in some cases, the availability of disposal.**

# Sealed Sources

**ORNL currently has 25 sources awaiting disposition:**

**Am-241 (4)**

**Pu-239 (2)**

**Cf-252 (1)**

**PuBe (2)**

**Co-60 (1)**

**Ra-226 (3)**

**Cs-137 (6)**

**Sr-90 (2)**

**I-129 (2)**

**Th-232 (1)**

**Ni-63 (1)**

# Summary

- **ORNL is currently undergoing transition of management of newly generated waste from the EM M&I to SC.**
- **Some but not all disposition paths have been established.**
- **Some disposition challenges remain.**

# Pacific Northwest National Laboratory

*New focus on:*

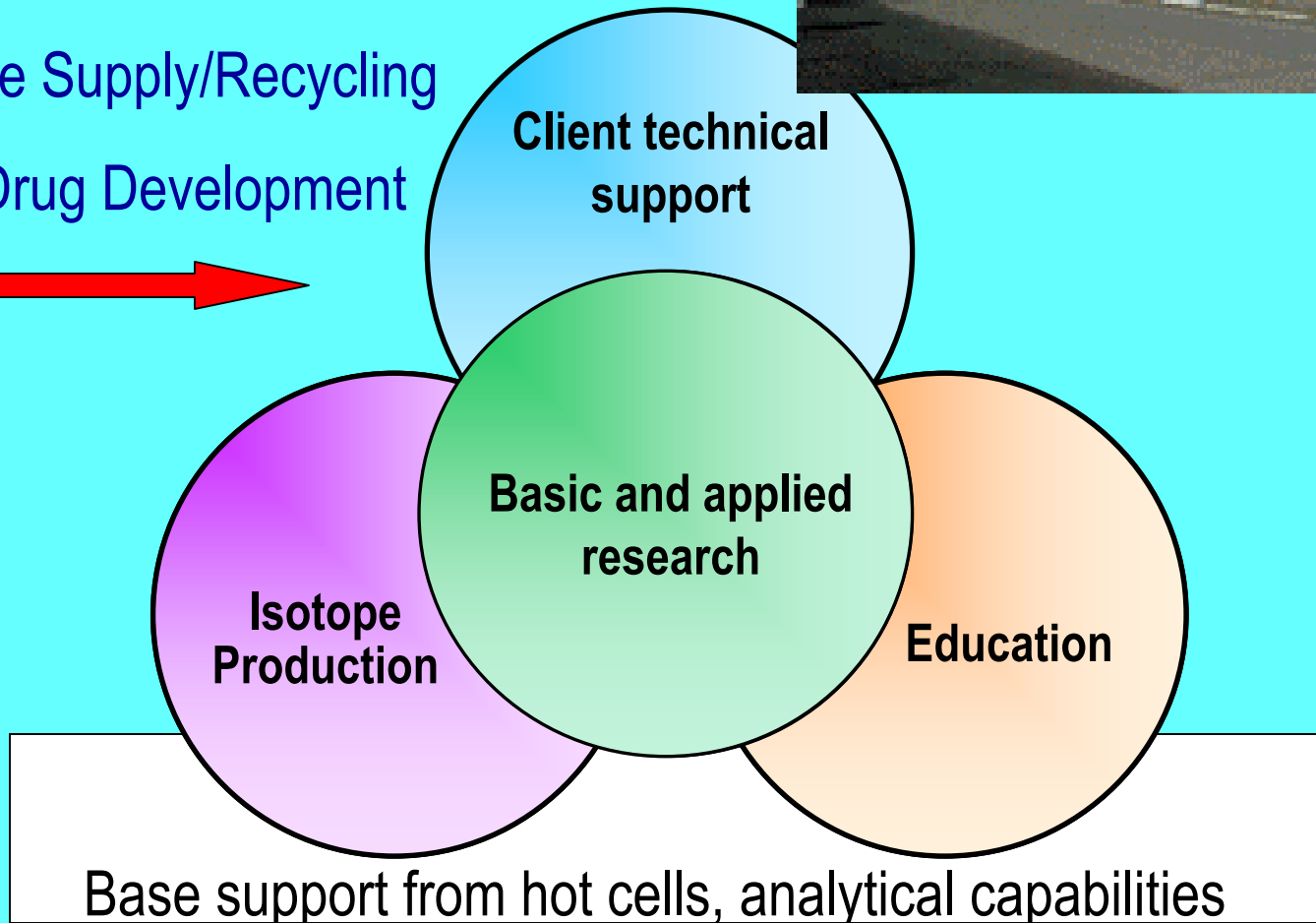
**Medical and  
Industrial Isotope  
Supply and  
Biomedical  
Applications**



U.S. Department of Energy  
Pacific Northwest National Laboratory

# Program Focus Areas

- Isotope Supply/Recycling
- New Drug Development



# Medical and Industrial Isotope Thrust Areas

---

## Isotope Production

- Generator systems
- Target processing

## Research

- Advanced separations
- New drug design and testing

## Technical support

- Radiation dosimetry

## Education

- Radiochemistry
- Radiopharmacy

# Thrust Areas: meeting national needs

---

## ■ Isotope Production

- Generator systems for therapeutic medical isotopes
- Reactor and accelerator target design and processing
- Recycled radioactive source materials

## ■ Basic and Applied Research

- Advanced separations technologies and automated systems
- New radioactive drug and device -- design and testing

## ■ Technical Support

- Radiation dosimetry for clinical and animal studies

## ■ Education

- support to graduate teaching programs in radiochemistry and radiopharmacy

# Isotope Production/Recycling

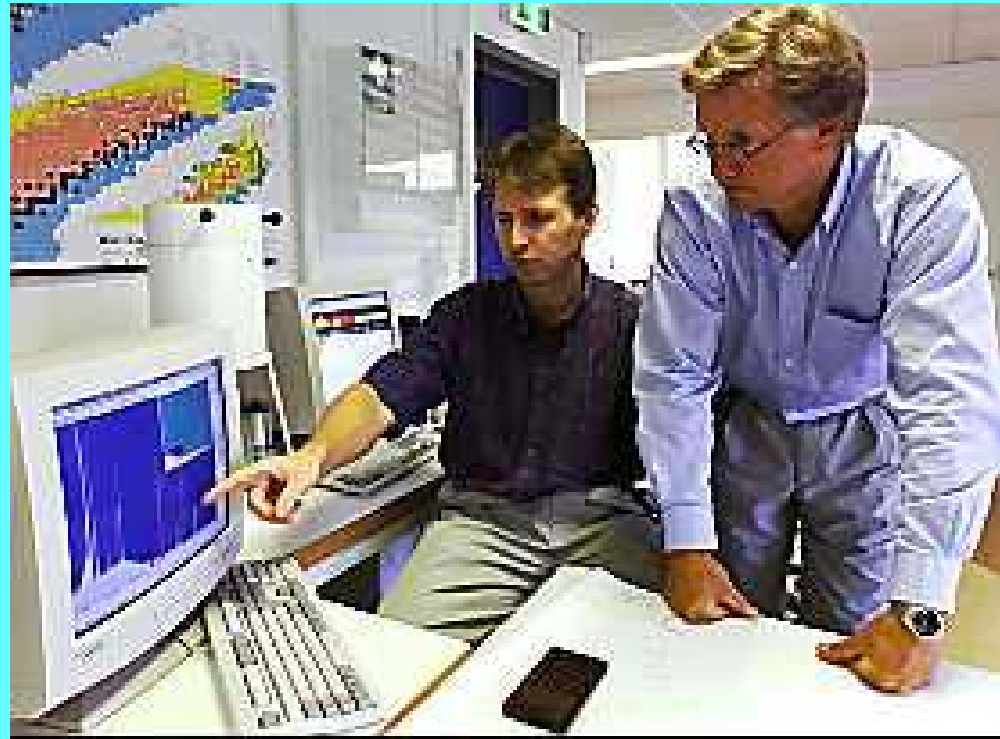
---

- Generator Systems for Lead-212/Bismuth-212
  - From U-232, Ra-228 source materials
- Strontium-90 Lease Agreements for Yttrium-90 production
- Reactor Target Processing
  - In partnership with university teaching reactors
  - Samarium-153, lutetium-177, holmium-166
- Recycling of “valuable waste” materials
  - Radium-226 as target material for actinium-227 and actinium-225 (parents of short-lived medical alpha emitting radioisotopes)
  - Cesium-137 for well logging and industrial radiography
  - Others?

# Success story: radium-226 for Norway

---

- Pure radium-226 was transferred from the University of California at Davis to Anticancer Therapeutic Inventions (ATI) in Oslo, Norway
- DOE saved money on waste disposal
- ATI acquired target material for a short-lived medical isotope (Ra-223)



# One key to our success will be successful partnerships

---

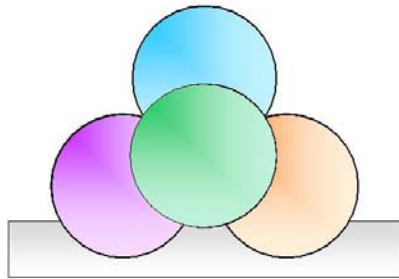


- Scientific and technical research collaborations
- Partnership agreements and CRADAs
- Close working relationships with DOE program offices
- Strong relationships with private industry, universities, and other DOE sites
- Identifying source material
- Matching sources to customers

# Challenges

---

- Programmatic support and coordination from both DOE-EM and DOE-NE
  - dispose of or recycle “valuable waste” materials?
- Facilities to store radium-226 with radon-222 control



Program contact at Pacific Northwest  
National Laboratory:

Dr. Darrell Fisher ph. 509-373-2000

# 325 Hazardous Waste Treatment Units

An Overview

Wayne B. Larson

# Background

---

Permitted by the Washington Department of Ecology for the treatment and storage of hazardous waste.

- Original mission
  - Store and treat waste associated with Hanford Site tank waste characterization studies
  - Develop mixed waste treatment technologies
- Current mission
  - Support waste management for the entire Pacific Northwest National Laboratory
  - Support DOE Hanford waste treatment technology development
- HWTU specializes in Mixed Waste treatment

# 300 Area of the Hanford Site



# Capacities

---

The 325 HWTUs are permitted for the following capacities:

■ Container Storage	10,000 liters
■ Container Treatment	1,514 liters/day
■ Tank Storage	12,574 liters
■ Tank Treatment	12,574 liters/day

# Capacities

---

Actual container treatment, due to facility space limitation, is dependent on the complexity of the treatment.

- 1500 liters in one operating day for contact handled waste.
- Remote handled waste, due to space limitations, is limited to approximately 2000 liters storage and 10 liters treatment per day.
- Written estimates containing the specifics of treatments, throughput, and cost are provided on a case-by-case basis for non-routine waste projects.

# RCRA Waste Codes Accepted

---

- D001-D043, F001-F005 are the most common waste codes
- A great number of P and U codes
- Washington State waste codes WSC2, WT01, WT02, WP01, WP02, and WP03

# Treatment Technologies

---

- The 325 HWTUs are permitted for a wide variety of chemical, physical, and biological treatments.
- Approximately 50 additional treatment technologies are listed in the 325 HWTUs Part B permit.
- Those currently employed include:
  - neutralization
  - chemical precipitation
  - chemical oxidation/ reduction
  - decanting
  - filtration
  - evaporation
  - ion exchange
  - stabilization

# Other Services Provided

---

- Sampling and analysis (case by case basis to demonstrate treatment success)
- Treatment for shipment back to generator for ultimate disposal
- Treatment for shipment to other permitted facilities for ultimate disposal
- Preparation of containers for shipping (marking and labeling)
- Profile and manifest preparation
- Provide assistance in preparation of LDR Notification/Certification

# HWTUs Contacts

---

- Ken Waller, HWTU Manager  
(509) 376-3906
- Wayne Larson, Treatment Operations Specialist  
(509) 376-2483
- Tom Gilmore, Treatment Operations S&E  
(509) 373-2905
- Joe Jacobsen, Technical Group Leader  
(509) 372-0623

# **Portsmouth Waste Management Challenges**

**Melda Rafferty**

**U.S. Department of Energy**

# **Portsmouth Site History**

- **Department of Energy (DOE) reservation is 3,714 acres; 1,200 acres are inside perimeter road**
- **Construction of the plant began in late 1952**
- **First process cell on stream in September 1954**
- **Ceased production of weapons material in 1964**
- **Construction of the Gas Centrifuge Enrichment Plant (GCEP) began in 1979, and ended in 1985**
- **Highly Enriched Uranium (HEU) production was suspended in 1991**
- **Privatization of United States Enrichment Corporation (USEC) in July 1998; ceased enrichment operations May 2001**
- **DOE signs contract with USEC for Cold Standby August 2001**

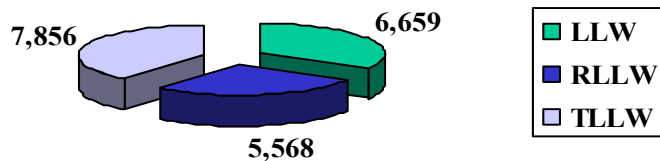
# PBS OR-653 PORTSMOUTH WASTE MANAGEMENT

## Outyear Scope of Work

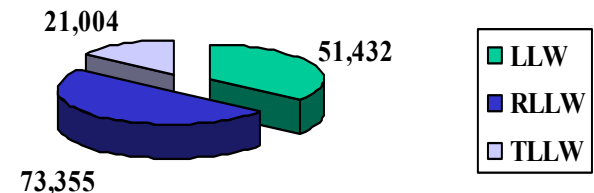
### 05.03 WASTE DISPOSITION

- CHARACTERIZATION, TREATMENT, AND/OR DISPOSAL OF ALL REMAINING LEGACY WASTE CONTAINERS (20,083 CONTAINERS)

**CONTAINERS TO BE  
DISPOSITIONED**



**OUTYEAR BUDGET (\$K)**



# **PORTSMOUTH WASTE MANAGEMENT CHALLENGES**

- **THERE ARE SEVERAL WASTE STREAMS THAT PRESENT CHALLENGES FOR CHARACTERIZATION AND TREATMENT/DISPOSAL DUE TO HIGH TECHNETIUM-99 AND URANIUM CONCENTRATIONS (ABOVE ACCEPTANCE CRITERIA FOR RECEIVING FACILITIES AND LABORATORIES)**
- **MOST OF THESE WASTE STREAMS ARE ALSO POTENTIAL MIXED (HAZARDOUS) WASTES**

<b>MWIR #</b>	<b>WASTE NAME</b>	<b>Number of Containers</b>	<b>Total Volume (cu. m)</b>	<b>Total Weight (Pounds)</b>
WO 15	Heavy Metal Sludge	19	16.5	18,358
WO 16	Microfiltration Sludge & Filters	5	1.0	950
WO 18	Ion Exchange Resins	268	82.6	129,963
WO 25	HEPA Filters	3	0.5	274
WO 26	Metal Shavings & Scrap	201	50.1	75,373
WO 27	X-705A Incinerator Ash	103	15.9	28,414
WO 36	Seal Dismantling Scrap Metal	3	0.9	1,269
WO 43	Filter Tank Gunk	104	29.1	47,017
WO 59	Bag Filters	4	0.9	639
WO 82	HEU Waste	11	1.1	1,091
WO 83	LEU Alumina Trap Material	189	47.9	82,875
<b>TOTAL</b>	<b>11 MWIRs</b>	<b>910</b>	<b>245.6</b>	<b>386,223</b>



# **DOE Nuclear Materials Issues Support Workshop**

---

## **Nuclear Material Disposition at Sandia National Laboratories**

**Warren Strong  
Debby Oscar**

**April 23 - 25, 2002  
Las Vegas, NV**



Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,  
for the United States Department of Energy under contract DE-AC04-94AL85000.





# Presentation Overview

---

- **Disposition Resources**
- **Nuclear Materials at Sandia**
  - Materials with known disposition pathway
  - “Dispositionally- Challenged” materials
- **Status of disposition effort**
- **Disposition issues**





# Sandia's Disposition Resources

---

- **NMM / MC&A**
  - Coordinate disposition of accountable materials
- **AHCF**
  - Materials above HC3
  - High exposure rates
- **RMWMF**
  - Materials below HC3
  - Non-accountable material
- **NISSMG**
  - Facilitate disposition of problem materials





# **Radioactive & Mixed Waste Management Facility**

---

- **All low-level and mixed waste generated by SNL goes through RWMWF**
- **Approved generator for waste disposal at the Nevada Test Site**
- **Waste Certification Official**
- **Transportation contracts for shipping**

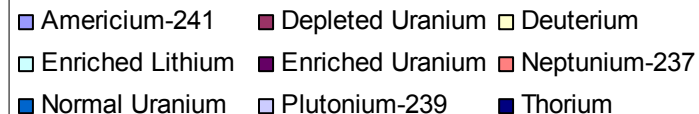
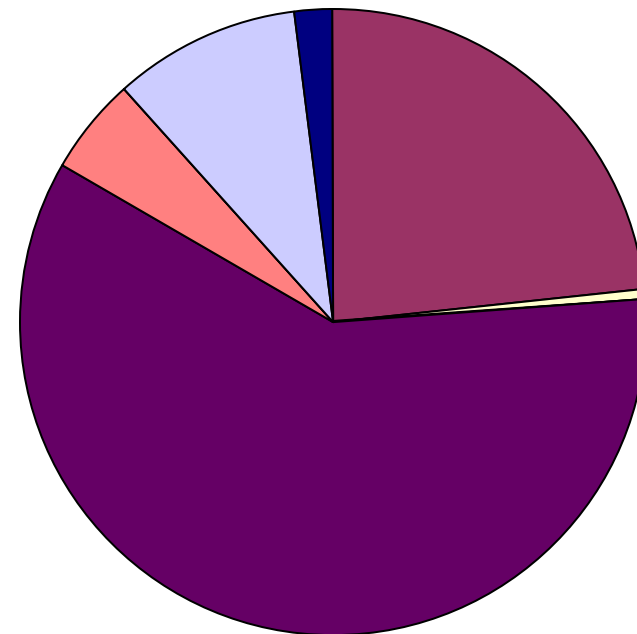


Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.



# Legacy Material Summary

Material Name	Mass (element)	Parcels	Items
Americium-241	3 g	1	2
Depleted Uranium	7720 kg	123	411
Deuterium	8 kg	3	9
Enriched Lithium	15 kg	1	1
Enriched Uranium	204 kg	135	1049
Neptunium-237	87 g	1	87
Normal Uranium	7 kg	1	1
Plutonium-239	840 g	23	175
Thorium	275 kg	1	32
	<b>TOTALS</b>	<b>289</b>	<b>1767</b>





# Enriched Uranium

---

- **Irradiated HEU oxide, Sodium Debris Bed Packages (SNFDB)**
- **Irradiated HEU oxide experiment residues (MP)**
- **Mixed oxide fuel, HEU/Pu (SNFDB)**
- **Irradiated HEU metal (cracked SPR-II fuel plate)**
- **Unirradiated HEU misc. scrap, experiment residues - multiple forms**
- **Unirradiated granular oxide, Clean / Tainted**
- **HEU- Moly-99 targets**





# Depleted Uranium

---

- **Clean oxide,**
  - **Fuel pins, Granules (fine powders)**
- **Weapons parts, metal, classified shapes**
  - **(204 items, 91 parcels)**
- **Unirradiated metal, Scrap plate, Shapes**





# Other Rad / Nuclear Materials

---

- **Pu-239 - MOX fuel, HEU/Pu (SNFDB), Source Plates, Metal Foils**
- **Americium-241 – Source**
- **NP-237 - Metal Foils, 1g ea.**
- **Normal Uranium - weapon component**
- **Thorium Oxide – clean**
- **Deuterium - some liquid, other residues?**
- **Legacy non-accountable radioactive sources / waste**





# Problem Materials

---

- **Categories**
  - Non-Defense TRU
  - Hot LLW
  - Deuterium
  - Small Quantities
- **Specific Items**
  - Sodium/Uranium experiment packages
  - SNAP source
  - Pharmaceutical Isotope production  
(uranium targets for Mo-99 production)





# Problem: Non-Defense TRU

---

- **Some Pu, MOX, and high burnup uranium**
- **Most materials in SNFDB; those not in SNFDB will require disposition planning**
- **These materials will require characterization in AHCF to identify radionuclide inventories**
- **Based on team's past experience in TA-V, most will be TRU**
- **Disposal at WIPP? Defense pedigree?**





# Problem: Hot LLW

---

- **MP 1 & 2: rollup ~6.5 kg, protection issues**

**Exposure rates in *Paco casks* (2001):**

**MP-1 = 9 mR/hr**

**MP-2 = 0.6 mR/hr**

**Need to assess exposure rates w/o shielding,  
inventory materials**

- **Mo-99 packages (irradiated):**

**Need to assess exposure rates w/o shielding. No  
sorting or characterization required. ORIGEN runs  
and inventories complete**

- **If greater than 200 mR/hr:**

**Packaging issues, possibly *NTS operational issues***






# Problem – SNAP Source

---

- SNL has one  $\text{Sr}^{90}$  source, 26-30 KCi when new
- SNAP levels generally exceed performance assessment/limits at LLW disposal sites
- NTS action level for  $\text{Sr}^{90}$  = ~8 Ci/55-gal drum
- Hanford's Category 3 limit = 10,800 Ci/drum
- Time for a performance assessment? What are other sites doing?





# Problem (?) - Deuterium

---

- **7 containers/items listed in LANMAS, ~ 8 Kg**
- **Form = D<sub>2</sub>O, lithium deuteride powder, reflector pins**
- **Not radioactive – don't bring it into the AHCF**
- **Disposal path for this material?**





# Campaign/Bin Status

---

- **All materials in AHCF database are currently assigned to a “campaign” *Campaign = Bin***
- **Prioritized schedule has been identified for campaigns**
- **Packaging requirements have been identified**
- **Tentative disposition paths have been identified**
- **Problem materials have been identified**
- **Spent fuel shipments identified and planned**





# Summary

---

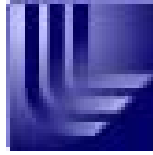
- **Sandia has internal resources to support disposition**
- **Most materials, waste, and spent fuel can be handled by internal resources**
- **Some disposition challenges ahead**
- **NISSMG enhances networking**



Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.



**Report on Results of the  
2001 Joint NISSMG & NMFA Small Sites  
Workshop**



## **Report on Results of the 2001 Joint NISSMG & NMFA**

### **Small Sites Workshop**

#### **1.0 Background –**

On September 11 and 12 the first Joint NISSMG & NMFA Small Sites Needs Workshop (Workshop) was held in Las Vegas, Nevada. In spite of a national tragedy, numerous (19) sites attended along with several Service Providers to create a free exchange of information for the purposes of creating assistance with the nuclear materials issues at the sites. Core team members at the Workshop documented the site information exchanged with Service Providers. Proceedings of the Workshop were published in October 2001. LLNL has conducted monitoring follow-up activities during the three months after the Workshop to assess its effectiveness. This report intends to document these follow-up activities and to identify any trends in needs, new needs, new technologies, and sites with particularly difficult or previously unidentified needs, as well as assess the overall effectiveness of the Workshop format, concept and location.

#### **2.0 Objective –**

Substantial and diverse inventories of legacy materials exist at Small Sites around the complex. Given vulnerabilities rising from 9/11 national security events, closing sites, material consolidation or reducing footprint by de-inventory of facilities has emerged as a higher priority. EM has established objectives which mirror this need at both large and small sites. Since small sites have limited expertise, capability and facilities for dealing with these materials, they are generally unaware of current transportation issues and opportunities and often have no defined disposition pathway for their materials. Experience has shown that continued periodic contact with and guidance to sites is necessary to sustain progress in dealing with their materials related issues.

This Workshop provides a cost effective means of establishing and maintaining contact for coordinated assistance. The objective of this report is to: 1. determine the overall value of the Workshop, 2. identify where resources may be best applied to support the needs at the smaller sites, and 3. assess which Service Providers receive greatest benefit from these Workshops. Answers to these questions will allow for more focussed application of resources for small sites needs in the future. Additionally, if new or difficult issues arise, they can be identified and registered with the appropriate organization to plan for remediation.

### **3.0 Categorization and Analyses of Information Gathered at the Workshop –**

Categorization of the sites and their needs can be accomplished in several ways. In order to identify trends, the report concentrates on determining the effectiveness of the Workshop relative to need type (characterization, shipping, technology, processing, etc.). The following figures represent the findings of the Workshop. They are:

- Workshop Summary Report (Figure 3.1)
- Needs Identified at the Workshop and Completed (Figure 3.2)
- Needs Identified at the Workshop Currently Being Worked (Figure 3.3)
- Needs to be Addressed (Figure 3.4)
- Needs by Need Category (Figure 3.5)
- Needs List by Service Provider (Figure 3.6)
- Small Sites Listed by DOE or NNSA Program Sponsors (Figure 3.7)
- In-Scope Site Attendance by DOE Operations Office (Figure 3.8)

### **4.0 Results and Observations of Analysis –**

#### **General Observations from the Workshop –**

Many sites have not established baseline disposition paths for excess materials or, in many cases; the baseline plans that had been established are not mature. Often, the reason is that sites do not perceive large costs or risks associated with storing excess nuclear materials and do not see an imperative to eliminate excess material. In particular, some closure sites have given little consideration to nuclear materials, which is a major concern because the disposition of nuclear materials has already impacted the critical path for closure at the Mound Site, as an example. If action is not taken, the same result will occur at other closure sites.

Many sites perceive a lack of viable disposition options for these materials. Although viable disposition paths are not currently available for some nuclear materials, this is not true for many. Several sites have been able to achieve significant reductions in their inventories of excess nuclear materials. However, many of the sites lack the expertise necessary to effectively select a disposition pathway.

Most sites are not coordinating with other sites that are trying to solve common problems. Consequently, only a few sites had made any significant effort to identify and eliminate excess nuclear materials. Of particular concern are the closure sites, where resources are being expended to develop expertise to determine disposition pathways for nuclear materials; expertise that will never be used again.

Needs Identified at the Workshop and Remediated – It is clear that the Workshop provided a valuable forum for sites seeking pathways to solve their needs. Several needs were met shortly after the Workshop was conducted simply by connecting the needs with Service Providers. Additionally, a number of needs are currently being worked by various providers. It is not clear that another such forum exists for the smaller sites. The unique format of this Workshop seems unparalleled in the complex. Appendix A represents comments received from sites attending the Workshop.

Needs With No Pathway – Analysis shows no grave or immediate health and safety related needs registered from the sites attending the Workshop. However, it is clear that some sites have no immediate clear path forward for the remediation of their needs. These needs generally require assistance with classified shapes, material packaging or transportation preparation method or capability at their site, characterization technique, material stabilization preparation technology, or transportation relief of some type such as shipping container or receiving site.

Potential Technology Needs – It was identified that smaller sites have technology development needs:

- ORNL sited the need for assessing the quantity of DUF6 in cylinders.
- Alpha radiolysis should be studied for U233 nitrate solutions at ORNL.
- Thorium separation from a vacuum downloading process should be developed.
- Gas cylinder integrity validation method needs to be developed.

Additionally, sites pointed out the need for the development of mobile handling capabilities for use at sites where material handling capabilities have been diminished and de-inventory is impossible without material handling. Several others identified the need for material characterization support, where characterization could be applied at a site or material shipment could occur to a characterization facility.

Transportation Needs – Sites at the Workshop cited several needs related to the transportation of their inventories of excess materials.

Disposition Sites – Several sites called attention to the need for designated sites for the disposition of their specific material types.

Service Provider Scope Gain – The Workshop provided the Service Providers present with a unique opportunity to present their capabilities and success stories with several small sites and work with them to create a relationship to support remediation efforts. Both small sites and providers commented on how the Workshop increased their project portfolio.

## **5.0 Conclusions/Recommendations –**

Needs Exist With No Pathway – Need NTS-03 (Classified Shapes and Parts) is a need that has no pathway to date. The recommendation for this need is to revive the now defunct, Classified Shapes Working Group.

Service Providers Benefit – Service Providers significantly benefit from this Workshop process. This forum serves as a marketing tool for their capabilities, and it has been

demonstrated that they pick-up work in this forum. The forum creates the scope and breadth of work that providers seek. For instance, the NISSMG registered 14 needs, some of which were previously unknown. It is recommended that the list of Service Providers be expanded to allow for expansion of support to small sites and that providers have a more formal process for assisting sites and documenting results and actions.

Workshop Value – It is clear that sites and Service Providers in attendance at the Workshop received valuable information and direction, many for the first time. Many of the sites received immediate assistance with clear-cut follow-on actions with Service Providers. Several sites commented that they simply did not know what to do with their materials related issues prior to attending the Workshop. Some of these needs have already been met; many are working. Needs which have no pathway toward remediation have been captured and can now be registered with appropriate Service Providers to allow for assistance. It should also be noted that while 19 sites did attend the Workshop and received assistance, 27 additional sites expressed interest in the September event yet were unable to attend. Those attending gave high marks when evaluating the Workshop (see Appendix A). It is recommended the Workshop be held at six months intervals for at least three times to allow for continuity in follow-up activities and assurance that all sites have access to this forum in a timely fashion and to allow for a full evolution of the value of this forum. The frequency of the Workshop should be evaluated in September of 2002. The cost for conducting two Workshops per year with appropriate follow-up is approximately \$100K/year. The costs for these Workshops should be borne, in part, by the Service Providers receiving the most benefit to their program and the Program elements managing the remediation at individual sites. It is clear that this Workshop, its format and the remediation follow-up perform a valuable function for the Department and should be continued with a twice a year schedule until the need among smaller sites diminishes.

Workshop Location – This Workshop was held in Las Vegas and was well attended. It is clear that both sites and Service Providers took full advantage of the low room rates, easy flight connections to Las Vegas and appreciated the warm weather and amenities of this location. It is recommended that the next Workshop (planned for the Spring of 2002) also be held in Las Vegas.

Figure 3.1

## Workshop Summary Report

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>ANL_E-01</b>					
Approximately 65 N sources and commercial sources (LLW).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG
<b>ANL_E-02</b>					
Cylinder with uranium hexafluoride (UF6).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	UF6	WET
<b>ANL_E-03</b>					
Lead casks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lead	WET
<b>ANL_E-04</b>					
Cyanide solutions /sulfide (reactive gas).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reactive Gas	WET
<b>ANL_E-05</b>					
Lead acid battery.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Battery	WET
<b>ANL_E-06</b>					
Need transportation means to move old lead shielded casks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Transportation	NTP
<b>BJ_P-01</b>					
Characterization of accountable materials is necessary for identification.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Characterization	NMFA

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>BNL-01</b>					
Am-Be sealed sources leaking.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources	NISSMG
<b>BOEING-01</b>					
Sludge (mixed waste). Potential for use with Gubka.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Waste	NMFA
<b>BOEING-02</b>					
Packaging for TRU waste packages for small quantity site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>BOEING-03</b>					
Sludge mixed waste from process water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Waste	WET
<b>EML-01</b>					
Decontamination of items using CO2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Contamination	Contamination
<b>EML-02</b>					
LEU - need to transport/disposition. Two liters U233/U235 potential Gubka.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Transportation	NMFA
<b>EML-03</b>					
Numerous nucleus and rad mtls to dispose of.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>EML-04</b>					
Lower inventory category; cost estimating for implementation (under EM-2); 160 items-electroplated, >60 items-approx 50% may be useful.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>EML-05</b>					
At least one Am/Be sealed source.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources/Am/Be	OSRP
<b>FDF-01</b>					
Th/V oxide in Silo 3 - waste (not sure). Calcined and clumping problem.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG
<b>FDF-02</b>					
Blending of enriched restricted nuclear materials to send to waste - characterization issues.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Waste	NMFA
<b>FDF-03</b>					
Cylinders w/UF6.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	UF6	WET
<b>FDF-04</b>					
Silo 3 material control when vacuumed; waste.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Waste	WET
<b>FDF-05</b>					
Batteries.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Battery	WET
<b>GE-01</b>					
Co-60 -5Ci largest individual. 3000 Ci total. Spent fuel-pellets.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG
<b>GE-02</b>					
Am Source. Hundreds of sealed sources in use. Two Pu pellets in TRU waste drums (50). Smoke detectors.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources	NISSMG

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>GE-03</b>					
Packaging requirements for retrievable gallon containers. Sectional, 36g fissile, 192 pieces, 20-50 containers.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Packaging	NMFA
<b>GE-04</b>					
Am/Be sealed sources.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources/Am/Be	OSRP
<b>GE-05</b>					
Contaminated liquids-no characterization.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Characterization	WET
<b>LANL-01</b>					
Disposal of classified parts contaminated with Tritium.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Classified Parts	Classified Parts
<b>LANL-02</b>					
H3 in welded containers. No way to characterize.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>LBL-01</b>					
Approximately 44 sealed sources intend to purify Am Sr Ra Pu Bk for research or market-path forward for work from Pu fabrication process.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources	NISSMG
<b>LBL-02</b>					
Left over exp's in "pit".	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG
<b>LBL-03</b>					
Contaminated concrete/lead.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lead	WET

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>LLNL-01</b>					
Packaging needed for oversized boxes that won't fit in a super tiger.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>LLNL-02</b>					
Oversized boxes; need packaging.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	WET
<b>LLNL-03</b>					
Classified materials.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Classified Parts	WET
<b>NTS-01</b>					
Special items/classified parts for disposition.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Classified Parts	Classified Parts
<b>NTS-02</b>					
250 TRU classified drums.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Contamination	Contamination
<b>NTS-03</b>					
Classified shapes/classified parts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Classified Parts	NISSMG
<b>NTS-04</b>					
Packaging needed for oversized boxes that won't fit in a super tiger.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>ORNL-01</b>					
Characterization of varied types of box/containers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Characterization	INEEL Packaging and Transportation
<b>ORNL-02</b>					
Assessing the quantity of DUF6 in cylinders. Technology needed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Technology	NMFA

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>ORNL-03</b>					
Technology needed; alpha radiolysis studies conversion of U233 nitrate solutions to stable oxide, separation of Thorium from vacuum downloading process for U233, cylinder integrity verification, nonintrusive determination of cylinder value, DU beneficial reuse, cylinder reuse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Technology	NMFA
<b>ORNL-04</b>					
Packaging needed for approximately 215 low enriched uranium rods unirradiated, fuel rods; won't fit in standard containers s/c or 6M container.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>SLAC-01</b>					
DU-600 kg plates; 150kg scrap-containers with kitty litter for storage.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Review	NISSMG
<b>SLAC-02</b>					
Activated lead.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lead	WET
<b>SLAC-03</b>					
Lead acid batteries.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Battery	WET
<b>SLAC-04</b>					
Tritium in oil; no characterization.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Characterization	WET
<b>SLAC-05</b>					
Deuterium gas-not a problem now - potential future problem.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gas	WET

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>SNL_AL-01</b>					
100+ depleted uranium classified parts to dispose of.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Classified Parts	Classified Parts
<b>SNL_AL-02</b>					
Packaging to move depleted uranium (large plates) and bury at NTS.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Packaging	NTP
<b>SNL_AL-03</b>					
RTG/SR-9.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SR-90	NISSMG
<b>SNL_AL-04</b>					
Excess sealed sources (a few).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources/Am/Be	OSRP
<b>SNL_AL-05</b>					
Re-evaluate existing Sandia NMFA needs.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Technology	NMFA
<b>SNL-L-01</b>					
Be classified parts to dispose of (not contaminated).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Classified Parts	Classified Parts
<b>SNL-L-02</b>					
Elimination of legacy DU.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DU	NISSMG
<b>TJL-01</b>					
Eberline B-1000 calibrator. Sealed sources from another site, in cask, wooden container Type A, labeled special form.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources	NISSMG
<b>TJL-02</b>					
Lead activated/lead contaminated.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lead Contamination	WET

Site's Materials Needs	Needs Completed	Needs Being Worked	Needs To Be Addressed	Category	Service Provider
<b>TJL-03</b>					
Determine cut off for deuterium recyclability of contaminated waste.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Waste	WET
<b>WASTREN-01</b>					
Does <1g of UO2 and Chem Lab need to be controlled/reported to NMMSS if not under 10 CFR835?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sealed Sources	NISSMG
<b>WASTREN-02</b>					
Am/Be sealed sources (2).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sealed Sources/Am/Be	OSRP

DEFINITIONS:

ANL\_E-Argonne Nat'l Lab  
 BJ-Bechtel Jacobs Co. LLC  
 BNL-Brookhaven Nat'l Lab  
 Boeing-Boeing  
 EML-Environmental Measurements Lab  
 FDF-Fluor Daniel Fernald  
 GE-GE Nuclear Energy  
 LANL-Los Alamos Nat'l Lab  
 LBL-Lawrence Berkeley Lab  
 LLNL-Lawrence Livermore Nat'l Lab  
 NTS-Nevada Test Site  
 ORNL-Oak Ridge National Lab  
 SLAC-Stanford Linear Accelerator Lab  
 SNL\_AL-Sandia Nat'l Labs, Albuquerque  
 SNL\_L-Sandia Nat'l Labs, Livermore  
 TJL-Thomas Jefferson Lab  
 WASTREN-WASTREN, Inc.

Figure 3.2

## Needs Identified at the Workshop and Completed

Site's Materials Needs	Needs Assignment	Actions
<b>BJ_P-01</b> Characterization of accountable materials is necessary for identification.	Independently by Site	Per Tom Wynn, this issue has been resolved.
<b>FDF-02</b> Blending of enriched restricted nuclear materials to send to waste - characterization issues.	NMFA and Dennis Cook/Fluor Daniel Fernald	Due to NMFA's site visit and their efforts, FDF has just been awarded \$1M from ASTD for this project. Per Dennis, they will bid and purchase the equipment this year and do the blending next year.
<b>GE-03</b> Packaging requirements for retrievable gallon containers. Sectional, 36g fissile, 192 pieces, 20-50 containers.	DOE OAK	At the Workshop, it was suggested that a conference call take place between Carlos, GE, Phil Wheatel, SNF PLM, and Ken Sorenson and Marty Moleche, PNT PLM. However, prior to the Workshop, GE received permission to ship material to the Hanford site and approval for Hanford to accept material. This issue is now closed.
<b>LBL-02</b> Left over exp's in "pit".	Dave Parks/NISSMG	Per Ray Schwartz, LBNL seems to have their Pit under control as of a couple of months ago. An electronic copy of the PPNL Disposition Plan was forwarded to Ray Schwartz on 12/18.

Site's Materials Needs	Needs Assignment	Actions
<b>SLAC-02</b>		
Activated lead.	Greg Hulet/WET	Lead was shipped to Envirocare in Utah for disposal which was very costly; will use Rich Meeker (contact made at workshop) for future disposal. Lead had to be disposed of quickly due to non-compliance issues and there wasn't enough time to work it through Rich Meeker. Need resolved.
<b>SNL-L-01</b>		
Be classified parts to dispose of (not contaminated).	NMFA	Original ownership of the parts was researched and it was determined that they belong to LLNL. Ownership was confirmed and approval received for shipment to LLNL. The parts were returned to LLNL on 12/19/01.
<b>WASTREN-01</b>		
Does <1g of UO2 and Chem Lab need to be controlled/reported to NMMSS if not under 10 CFR835?	Dave Parks/NISSMG	Dave Parks had Bryce Denning, Bechtel's Nuclear Material Manager, contact Dan Dow with an explanation of the accounting system. Issue is resolved.

DEFINITIONS:

ANL\_E-Argonne Nat'l Lab  
 BJ-Bechtel Jacobs Co. LLC  
 BNL-Brookhaven Nat'l Lab  
 Boeing-Boeing  
 EML-Environmental Measurements Lab  
 FDF-Fluor Daniel Fernald  
 GE-GE Nuclear Energy  
 LANL-Los Alamos Nat'l Lab  
 LBL-Lawrence Berkeley Lab  
 LLNL-Lawrence Livermore Nat'l Lab  
 NTS-Nevada Test Site  
 ORNL-Oak Ridge National Lab  
 SLAC-Stanford Linear Accelerator Lab  
 SNL\_AL-Sandia Nat'l Labs, Albuquerque  
 SNL\_L-Sandia Nat'l Labs, Livermore  
 TJL-Thomas Jefferson Lab  
 WASTREN-WASTREN, Inc.

**Figure 3.3**

## **Needs Identified at the Workshop Being Worked**

<b>Site's Materials Needs</b>	<b>Needs Assignment</b>	<b>Actions</b>
<b>ANL_E-01</b> Approximately 65 N sources and commercial sources (LLW).	Terry Lang/Bechtel Jacobs	John Herman, who represented ANL at the Workshop, forward information on to Terry Lang, ANL-East's Facility Manage, who should contact NISSMG.
<b>ANL_E-02</b> Cylinder with uranium hexaflouride (UF6).	Greg Hulet/WET	Per Greg Hulet, WET, a contract has recently been put in place so he is now ready to contact the Site and work the issue.
<b>ANL_E-03</b> Lead casks.	Greg Hulet/WET	Greg Hulet,WET, is meeting with OR to discuss various recycling efforts.
<b>ANL_E-04</b> Cyanide solutions /sulfide (reactive gas).	John Herman/Argonne Nat'l East	Contact established between John Herman, ANL-East, and Susan Carson, Sandia.
<b>ANL_E-05</b> Lead acid battery.	Greg Hulet/Wet and Dennis Cook/Fluor Daniel Fernald	Greg Hulet, WET, to provide a contract to cover disposal of all lead batteries. The new contract should be in place by mid March.

<b>Site's Materials Needs</b>	<b>Needs Assignment</b>	<b>Actions</b>
<b>ANL_E-06</b>		
Need transportation means to move old lead shielded casks.	Steve Hamp/NTP	Terry Lang, ANL-East's Facility Manager, has marked this as an issue to be worked in 2003. Steve Hamp, National Transportation Program, has referred the packaging issue to his packaging group to resolve.
<b>BNL-01</b>		
Am-Be sealed sources leaking.	Dave Parks and Gary Polansky/NISSMG	Working with Dave Parks and Gary Polansky, NISSMG.
<b>BOEING-01</b>		
Sludge (mixed waste). Potential for use with Gubka.	Referred to WET	Referred to WET.
<b>BOEING-02</b>		
Packaging for TRU waste packages for small quantity site.	Traci Taul/INEEL Transportation and Packaging	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas the packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.
<b>BOEING-03</b>		
Sludge mixed waste from process water.	Ravnessh Amar/Boeing	The Phone numbers for Dick Govers, Nochar contact for WET, and Tom Klasso, SAMMS contact for WET, were forwarded to Ravnessh, and he will make the follow up calls.
<b>EML-01</b>		
Decontamination of items using CO2.	Jim Low/NISSMG	Due to budget cuts, an outside equipment company will not be used. However, a disposal pathway is being worked with Jim Low, NISSMG, (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, a second option of using Brookhaven Nat'l Lab to disposition the items (Brookhaven contact made at the Workshop) might also be considered.

Site's Materials Needs	Needs Assignment	Actions
<b>EML-02</b>		
LEU - need to transport/disposition. Two liters U233/U235 potential Gubka.	Jim Low/NISSMG	A disposal pathway is being worked with Jim Low, NISSMG, (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, might consider a second option of using Brookhaven Nat'l Lab to disposition items (Brookhaven contact made at the Workshop).
<b>EML-03</b>		
Numerous nucleus and rad mtl's to dispose of.	Jim Low/NISSMG	See above.
<b>EML-04</b>		
Lower inventory category; cost estimating for implementation (under EM-2); 160 items-electroplated, >60 items-approx 50% may be useful.	Jim Low/NISSMG	Jim Low, NISSMG, has made follow up contact; details are being worked out.
<b>EML-05</b>		
At least one Am/Be sealed source.	Jim Low/NISSMG and Shelby Leonard/OSRP	A disposal pathway is being worked with Jim Low/NISSMG (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, might consider a second option of using Brookhaven Nat'l Lab to disposition items (Brookhaven contact made at the Workshop). Shelby Leonard, OSRP, also contacted Fabien to see if OSRP could be of service.
<b>FDF-01</b>		
Th/V oxide in Silo 3 - waste (not sure). Calcined and clumping problem.	Dave Parks/NISSMG	Dave Parks, NISSMG, has established contact with the Fluor Daniel technical staff; pursuing MOA/MOU exchanging information.
<b>FDF-03</b>		
Cylinders w/UF6.	Greg Hulet/NISSMG	Per Greg Hulet, WET, a contract has recently been put in place. Greg is now ready to contact the Site and work the issue.

Site's Materials Needs	Needs Assignment	Actions
<b>FDF-04</b>		
Silo 3 material control when vacuumed; waste.	NMFA	Per Dennis Cook, there have been ongoing communications since the Workshop with NMFA and Idaho who are now working on alternatives.
<b>FDF-05</b>		
Batteries.	Greg Hulet/NISSMG and Dennis Cook/Fluor Daniel Fernald	Greg Hulet, WET, is in the process of getting a contract in place to cover disposal of all lead batteries; previous contract has expired. The contract should be in place by mid March.
<b>GE-01</b>		
Co-60 -5Ci largest individual. 3000 Ci total. Spent fuel-pellets.	Paul Smith and Dave Parks/NISSMG	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.
<b>GE-02</b>		
Am Source. Hundreds of sealed sources in use. Two Pu pellets in TRU waste drums (50). Smoke detectors.	NISSMG	See above.
<b>GE-04</b>		
Am/Be sealed sources.	Shelby Leonard/OSRP and Carlos Martinez/GE Nuclear Energy	See above.
<b>GE-05</b>		
Contaminated liquids-no characterization.	Carlos Martinez/GE Nuclear Energy	See above.
<b>LANL-01</b>		
Disposal of classified parts contaminated with Tritium.	Suzanne Kitten/Los Alamos Nat'l Lab	Suzanne Kitten, LANL, has briefly discussed the issue with Wolfgang Dworzak, LANL, and is in the process of scheduling a formal meeting with Wolfgang and Wendell Brown, LANL.

Site's Materials Needs	Needs Assignment	Actions
<b>LANL-02</b>		
H3 in welded containers. No way to characterize.	Greg Hulet/WET and Suzanne Kitten/Los Alamos Nat'l Lab	Per Suzanne Kitten, LANL, she is waiting for approval from the Tritium Operations Safety Committee and the DNFSB (Defense Nuclear Facilities Safety Board) to use the off gassing process suggested by Greg Hulet, WET, at the Workshop. Suzanne expects to have approval to perform the process next year.
<b>LBL-01</b>		
Approximately 44 sealed sources intend to purify Am Sr Ra Pu Bk for research or market-path forward for work from Pu fabrication process.	NISSMG	NISSMG will contact Warren Yip at LBL (510/486-4297)
<b>LBL-03</b>		
Contaminated concrete/lead.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>LLNL-01</b>		
Packaging needed for oversized boxes that won't fit in a super tiger.	Traci Taul/INEEL Transportation and Packaging	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.
<b>LLNL-02</b>		
Oversized boxes; need packaging.	Greg Hulet/WET	Per Greg Hulet, WET, this issue has been worked somewhat, but due to decreased funding, further work will have to wait until the next fiscal year.
<b>LLNL-03</b>		
Classified materials.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.

Site's Materials Needs	Needs Assignment	Actions
<b>NTS-01</b>		
Special items/classified parts for disposition.	Michael Blau/Classified Parts	Per Michael Blau, Classified Parts, the Workshop addressed this issue with a higher level (Jim Low, DOE AL). Jim Low had Savannah River looking at dealing with this problem in a similar manner used in the past. Mid December, Michael Blau received funding approval from DOE to build the process to dispose of similar materials at Savannah River and Rocky Flats. Michael Blau is scheduling a meeting at NTS in Feb/March timeframe. This may create a pathway for NTS to dispose of their items.
<b>NTS-02</b>		
250 TRU classified drums.	ASTD Program	Per Ed Hohman, DOE NV, a joint proposal with Pantex was submitted to the ASTD Program (an EM Program) to recycle drums and classified materials at Pantex at OR. This contact was NOT made at the Workshop.
<b>NTS-04</b>		
Packaging needed for oversized boxes that won't fit in a super tiger.	Traci Taul/INEEL Transportation and Packaging	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.
<b>ORNL-01</b>		
Characterization of varied types of box/containers.	Lance Mezga/ORNL and Pete Castle/Office of Science	INEEL has deployed enhanced NDA technology in the TRU characterization activity. These enhancements may resolve some of the characterization issues. Contact/follow-up information as noted at the Workshop was forwarded to Lance Mezga, ORNL. He will initiate the contact with Pete Castle, Office of Science.

Site's Materials Needs	Needs Assignment	Actions
<b>ORNL-02</b>		
Assessing the quantity of DUF6 in cylinders. Technology needed.	Lance Mezga/ORNL and Pete Castle/Office of Science	INEEL's pins technology is a possible solution. Contact/follow-up information as noted at the Workshop was forwarded to Lance Mezga. He will initiate the contact with Pete Castle.
<b>ORNL-03</b>		
Technology needed; alpha radiolysis studies conversion of U233 nitrate solutions to stable oxide, separation of Thorium from vacuum downloading process for U233, cylinder integrity verification, nonintrusive determination of cylinder value, DU beneficial reuse, cylinder reuse.	NMFA	Per Tom Wynn, DOD ORO, this issue is being worked within NMFA, however it is a costly, long-term process.
<b>ORNL-04</b>		
Packaging needed for approximately 215 low enriched uranium rods unirradiated, fuel rods; won't fit in standard containers s/c or 6M container.	Traci Taul/INEEL Transportation and Packaging and Steve Hamp/NTP	Per Max Smith at OR, a program at Sandia in New Mexico is interested in receiving the unirradiated fuel elements (6.5-7% enriched) currently at Penn State, and there is a contract in place to do so (contact at Sandia did NOT result from the Workshop). Problem is with packaging. (Max was given contact information for Traci Taul, Packaging and Transportation, and Steve Hamp, National Transportation Program, to contact and discuss possible packaging solutions.)
<b>SLAC-01</b>		
DU-600 kg plates; 150kg scrap-containers with kitty litter for storage.	Roger Sit/Stanford Linear Accelerator Center	Roger Sit, Stanford Linear Accelerator, learned at the Workshop that DOE wasn't interested in recycling DU due to low quantities complex-wide and that he could dispose of as radiation waste, which he will be doing in the near future.
<b>SLAC-03</b>		
Lead acid batteries.	Greg Hulet/WET	Per Greg Hulet, WET, they are in the process of getting a contract in place to cover disposal of all lead batteries; previous contract has expired. The contract should be in place by mid March.

Site's Materials Needs	Needs Assignment	Actions
<b>SLAC-04</b>		
Tritium in oil; no characterization.	Roger Sit/Stanford Linear Accelerator Center	Roger Sit, Standord Linear Accelerator, has not had time to make contact with Dick Govers, Nochar contact for WET, as directed at the Workshop.
<b>SLAC-05</b>		
Deuterium gas-not a problem now - potential future problem.	Roger Sit/Stanford Linear Accelerator Center	Roger Sit, Stanford Linear Accelerator, has not had time to make contact with the gas provider as outlined at the Workshop.
<b>SNL_AL-01</b>		
100+ depleted uranium classified parts to dispose of.	Warren Strong, Sandia National Laboratories	Warren Strong, Sandia National Laboratories, Albuquerque, has not contacted NTS as of yet, but has had internal meetings regarding this issue.
<b>SNL_AL-02</b>		
Packaging to move depleted uranium (large plates) and bury at NTS.	Jim Low/NISSMG and Warren Strong/Sandia National Laboratories	Waren Strong, Sandia National Laboratories, Albuquerque, hasn't been able to do any of the preparation work due to closing sites etc. However, a hot cell will be opening up in March/April to do the work. A Work Agreement has been put in place with Jim Low, NISSMG, to disposition all of LANL's legacy accountable materials in the Summer of 2002.
<b>SNL_AL-03</b>		
RTG/SR-9.	NISSMG Administration	Per Dave Parks, NISSMG, this issue is being worked, but is waiting for the ROD on EIS for mixed low level waste. Per Warren, Sandia National Laboratories, Albuquerque, this is a complex-wide issue with RTGs, and DOE is trying to solve the issue for all sites by locating one area to dispose of all RTGs rather than have each site act independently.

<b>Site's Materials Needs</b>	<b>Needs Assignment</b>	<b>Actions</b>
<b>SNL_AL-04</b>		
Excess sealed sources (a few).	Jim Low/NISSMG	Per Warren Strong, Sandia National Laboratories, Albuquerque, a Work Agreement has been put in place with Jim Low/NISSMG to disposition all of LANL's legacy accountable materials Summer of 2002.
<b>SNL_AL-05</b>		
Re-evaluate existing Sandia NMFA needs.	NISSMG	Per Warren Strong, Sandia National Laboratories, Albuquerque, Sandia now has a task agreement in place with NISSMG to address their nuclear materials disposition and Sandia's needs specifically. This contact was made at the Workshop.
<b>SNL-L-02</b>		
Elimination of legacy DU.	Dave Parks/NISSMG	Dave Parks, NISSMG contacted the U.S. Army Heavy Metal Division; agreed to provide waste profile when completed.
<b>TJL-01</b>		
Eberline B-1000 calibrator. Sealed sources from another site, in cask, wooden container Type A, labeled special form.	NISSMG	Robert May's intention at the workshop was to give NISSMG a heads-up that in the next five years he will be decommissioning the source, and at that time, he will need a packaging process to meet the requirements.
<b>TJL-02</b>		
Lead activated/lead contaminated.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>TJL-03</b>		
Determine cut off for deuterium recyclability of contaminated waste.	Debbie Malone/NMFA	Helen Belencan, DOE HQ (301/903-7921) is working on the recycle guidelines.

Site's Materials Needs	Needs Assignment	Actions
<b>WASTREN-02</b>		
Am/Be sealed sources (2).	Dan Dow/WASTREN and Shelby Leonard/OSRP	Container should be available May-June 2002.

DEFINITIONS:

ANL\_E-Argonne Nat'l Lab  
 BJ-Bechtel Jacobs Co. LLC  
 BNL-Brookhaven Nat'l Lab  
 Boeing-Boeing  
 EML-Environmental Measurements Lab  
 FDF-Fluor Daniel Fernald  
 GE-GE Nuclear Energy  
 LANL-Los Alamos Nat'l Lab  
 LBL-Lawrence Berkeley Lab  
 LLNL-Lawrence Livermore Nat'l Lab  
 NTS-Nevada Test Site  
 ORNL-Oak Ridge National Lab  
 SLAC-Stanford Linear Accelerator Lab  
 SNL\_AL-Sandia Nat'l Labs, Albuquerque  
 SNL\_L-Sandia Nat'l Labs, Livermore  
 TJL-Thomas Jefferson Lab  
 WASTREN-WASTREN, Inc.

Figure 3.4

Needs to be Addressed

Site's Materials Needs	Needs Assignment	Action
NTS-03		
Classified shapes/classified parts.		Suggestion was to bring back the Classified Shapes Working Group. Looking at more than sixty 400 Ci neutron sources. Looking at processing options. These processes might also apply to Nevada's items.

DEFINITIONS:  
ANL\_E-Argonne Nat'l Lab  
BJ-Bechtel Jacobs Co. LLC  
BNL-Brookhaven Nat'l Lab  
Boeing-Boeing  
EML-Environmental Measurements Lab  
FDF-Fluor Daniel Fernald  
GE-GE Nuclear Energy  
LANL-Los Alamos Nat'l Lab  
LBL-Lawrence Berkeley Lab  
LLNL-Lawrence Livermore Nat'l Lab  
NTS-Nevada Test Site  
ORNL-Oak Ridge National Lab  
SLAC-Stanford Linear Accelerator Lab  
SNL\_AL-Sandia Nat'l Labs, Albuquerque  
SNL\_L-Sandia Nat'l Labs, Livermore  
TJL-Thomas Jefferson Lab  
WASTREN-WASTREN, Inc.

Figure 3.5

### Needs by Need Category

Category	Site's Materials Needs	Needs Status
<b>Battery</b>		
<b>ANL_E-05</b>	Lead acid battery.	Greg Hulet, WET, is in the process of getting a contract in place to cover disposal of all lead batteries; previous contract has expired. New contract should be in place by Mid March.
<b>FDF-05</b>	Batteries.	Greg Hulet, WET, to provide a contract to cover disposal of all lead batteries. The new contract should be in place by mid March.
<b>SLAC-03</b>	Lead acid batteries.	Greg Hulet, WET, to provide a contract to cover disposal of all lead batteries. The new contract should be in place by mid March.
<b>Characterization</b>		
<b>BJ_P-01</b>	Characterization of accountable materials is necessary for identification.	Per Tom Wynn, this issue has been resolved.
<b>GE-05</b>	Contaminated liquids-no characterization.	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.

Category	Site's Materials Needs	Needs Status
ORNL-01	Characterization of varied types of box/containers.	INEEL has deployed enhanced NDA technology in the TRU characterization activity. These enhancements may resolve some of the characterization issues. Contact/follow-up information as noted at the Workshop was forwarded to Lance Mezga, ORNL. He will initiate the contact with Pete Castle, Office of Science.
SLAC-04	Tritium in oil; no characterization.	Roger Sit, Standord Linear Accelerator, has not had time to make contact with Dick Govers, Nochar contact for WET, as directed at the Workshop.
<b>Classified Parts</b>		
LANL-01	Disposal of classified parts contaminated with Tritium.	Suzanne Kitten, LANL, has briefly discussed the issue with Wolfgang Dworzak, LANL, and is in the process of scheduling a formal meeting with Wolfgang and Wendell Brown, LANL. Also, Savannah River may take some of the parts off their hands.
LLNL-03	Classified materials.	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
NTS-01	Special items/classified parts for disposition.	Per Michael Blau, Classified Parts, the Workshop addressed this issue with a higher level (Jim Low, DOE AL). Jim Low had Savannah River looking at dealing with this problem in a similar manner used in the past. Mid December, Michael Blau received funding approval from DOE to build the process to dispose of similar materials at Savannah River and Rocky Flats. Michael Blau is scheduling a meeting at NTS in Feb/March timeframe. This may create a pathway for NTS to dispose of their items.

Category	Site's Materials Needs	Needs Status
NTS-03	Classified shapes/classified parts.	Suggestion was to bring back the Classified Shapes Working Group. Looking at more than sixty 400 Ci neutron sources. Looking at processing options. These processes might also apply to Nevada's items.
SNL_AL-01	100+ depleted uranium classified parts to dispose of.	Warren Strong, Sandia National Laboratories, Albuquerque, has not contacted NTS as of yet, but has had internal meetings regarding this issue.
SNL-L-01	Be classified parts to dispose of (not contaminated).	Original ownership of the parts was researched and it was determined that they belong to LLNL. Ownership was confirmed and approval received for shipment to LLNL. The parts were returned to LLNL on 12/19/01.
<b>Contamination</b>		
EML-01	Decontamination of items using CO2.	Due to budget cuts, an outside equipment company will not be used. However, a disposal pathway is being worked with Jim Low, NISSMG, (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, a second option of using Brookhaven Nat'l Lab to disposition the items (Brookhaven contact made at the Workshop) might also be considered.
NTS-02	250 TRU classified drums.	Per Ed Hohman, DOE NV, a joint proposal with Pantex was submitted to the ASTD Program (an EM Program) to recycle drums and classified materials at Pantex at OR. This contact was NOT made at the Workshop. However, contact with Michael Blau, Classified Parts, was and that will be helpful if the proposal doesn't pan out.
<b>DU</b>		
SNL-L-02	Elimination of legacy DU.	Dave Parks, NISSMG contacted the U.S. Army Heavy Metal Division; agreed to provide waste profile when completed.

Category	Site's Materials Needs	Needs Status
<b>Gas</b>		
<b>SLAC-05</b>	Deuterium gas-not a problem now - potential future problem.	Roger Sit, Stanford Linear Accelerator, has not had time to make contact with the gas provider as outlined at the Workshop.
<b>Lead</b>		
<b>ANL_E-03</b>	Lead casks.	Greg Hulet, WET, is meeting with OR to discuss various recycling efforts.
<b>LBL-03</b>	Contaminated concrete/lead.	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>SLAC-02</b>	Activated lead.	Lead was shipped to Envirocare in Utah for disposal which was very costly; will use Rich Meeker (contact made at workshop) for future disposal. Lead had to be disposed of quickly due to non-compliance issues and there wasn't enough time to work it through Rich Meeker.
<b>Lead Contamination</b>		
<b>TJL-02</b>	Lead activated/lead contaminated.	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>Packaging</b>		
<b>BOEING-02</b>	Packaging for TRU waste packages for small quantity site.	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas the packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.

Category	Site's Materials Needs	Needs Status
<b>EML-03</b>	Numerous nucleus and rad mtl's to dispose of.	A disposal pathway is being worked with Jim Low, NISSMG, (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, might consider a second option of using Brookhaven Nat'l Lab to disposition items (Brookhaven contact made at the Workshop).
<b>GE-03</b>	Packaging requirements for retrievable gallon containers. Sectional, 36g fissile, 192 pieces, 20-50 containers.	At the Workshop, it was suggested that a conference call take place between Carlos Martinez, GE, Phil Wheatel, SNF PLM, and Ken Sorenson and Marty Moleche, PNT PLM. Per Carlos, GE, a conference call was never needed. Prior to the Workshop, Carlos was working with a DOE OAK contact and soon after the Workshop GE received permission to ship material to the Hanford site and approval for Hanford to accept the material. This issue is now closed.
<b>LANL-02</b>	H3 in welded containers. No way to characterize.	Per Suzanne Kitten, LANL, she is waiting for approval from the Tritium Operations Safety Committee and the DNFSB (Defense Nuclear Facilities Safety Board) to use the off gassing process suggested by Greg Hulet, WET, at the Workshop. Suzanne expects to have approval to perform the process next year.
<b>LLNL-01</b>	Packaging needed for oversized boxes that won't fit in a super tiger.	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.
<b>LLNL-02</b>	Oversized boxes; need packaging.	Per Greg Hulet, WET, this issue has been worked somewhat, but due to decreased funding, further work will have to wait until the next fiscal year.

Category	Site's Materials Needs	Needs Status
<b>NTS-04</b>	Packaging needed for oversized boxes that won't fit in a super tiger.	Traci Taul, Packaging and Transportation, has submitted a report to Huzienga titled "Type B and Type A Fissile Packaging Report for 2001-2010" whereas packaging issues for Bechtel Nevada, Boeing, and LLNL are indicated as priority.
<b>ORNL-04</b>	Packaging needed for approximately 215 low enriched uranium rods unirradiated, fuel rods; won't fit in standard containers s/c or 6M container.	Per Max Smith at OR, a program at Sandia in New Mexico is interested in receiving the unirradiated fuel elements (6.5-7% enriched) currently at Penn State, and there is a contract in place to do so (contact at Sandia did NOT result from the Workshop). Problem is with packaging. Max has located a container that will work, but there is only ONE of them and it would require several trips to deliver all the fuel cells. Fuel cells are too long to fit in the 6M container. Max was given contact information for Tracy Taul, Packaging and Transportation, and Steve Hamp, National Transportation program, to contact and discuss possible packaging solutions.
<b>SNL_AL-02</b>	Packaging to move depleted uranium (large plates) and bury at NTS.	Waren Strong, Sandia National Laboratories, Albuquerque, hasn't been able to do any of the preparation work due to closing sites, etc. However, a hot cell will be opening up in March/April to do the work. A Work Agreement has been put in place with Jim Low, NISSMG, to disposition all of LANL's legacy accountable materials in the Summer of 2002.
<b>Reactive Gas</b>		
<b>ANL_E-04</b>	Cyanide solutions /sulfide (reactive gas).	The Workshop evaluation form stated that Susan Carson was at LANL, however, she is actually at Sandia. Susan's phone number was emailed to John Herman for follow-up.
<b>Sealed Sources</b>		
<b>BNL-01</b>	Am-Be sealed sources leaking.	Working with Dave Parks and Gary Polansky, NISSMG.

Category	Site's Materials Needs	Needs Status
<b>GE-02</b>	Am Source. Hundreds of sealed sources in use. Two Pu pellets in TRU waste drums (50). Smoke detectors.	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.
<b>LBL-01</b>	Approximately 44 sealed sources intend to purify Am Sr Ra Pu Bk for research or market-path forward for work from Pu fabrication process.	NISSMG will contact Warren Yip at LBL (510/486-4297)
<b>TJL-01</b>	Eberline B-1000 calibrator. Sealed sources from another site, in cask, wooden container Type A, labeled special form.	Robert May's intention at the workshop was to give NISSMG a heads-up that in the next five years he will be decommissioning the source, and at that time, he will need a packaging process to meet the requirements.
<b>WASTREN-01</b>	Does <1g of UO2 and Chem Lab need to be controlled/reported to NMMSS if not under 10 CFR835?	Dave Parks had Bryce Denning, Bechtel's Nuclear Material Manager, contact Dan Dow with an explanation of the accounting system. Issue is resolved.
<b>Sealed Sources/Am/Be</b>		
<b>EML-05</b>	At least one Am/Be sealed source.	A disposal pathway is being worked with Jim Low/NISSMG (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, might consider a second option of using Brookhaven Nat'l Lab to disposition items (Brookhaven contact made at the Workshop). Shelby Leonard, OSRP, also contacted Fabien to see if OSRP could be of service.

Category	Site's Materials Needs	Needs Status
<b>GE-04</b>	Am/Be sealed sources.	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.
<b>SNL_AL-04</b>	Excess sealed sources (a few).	Per Warren Strong, Sandia National Laboratories, Albuquerque, a Work Agreement has been put in place with Jim Low/NISSMG to disposition all of LANL's legacy accountable materials Summer of 2002. This will include the excess sources; OSRP will not be involved in the disposition process.
<b>WASTREN-02</b>	Am/Be sealed sources (2).	Container should be available May-June 2002.
<b>Site Review</b>		
<b>ANL_E-01</b>	Approximately 65 N sources and commercial sources (LLW).	John Herman, who represented ANL at the Workshop, forward information on to Terry Lang, ANL-East's Facility Manager, who should contact NISSMG if they are really serious about eliminating building inventory.
<b>EML-04</b>	Lower inventory category; cost estimating for implementation (under EM-2); 160 items-electroplated, >60 items-approx 50% may be useful.	Jim Low, NISSMG, has made follow up contact; details are being worked out.
<b>FDF-01</b>	Th/V oxide in Silo 3 - waste (not sure). Calcined and clumping problem.	Dave Parks, NISSMG, has established contact with the Fluor Daniel technical staff; pursuing MOA/MOU exchanging information.

Category	Site's Materials Needs	Needs Status
<b>GE-01</b>	Co-60 -5Ci largest individual. 3000 Ci total. Spent fuel-pellets.	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.
<b>LBL-02</b>	Left over exp's in "pit".	Per Ray Schwartz, LBNL seems to have their Pit under control as of a couple of months ago. An electronic copy of the PPNL Disposition Plan was forwarded to Ray Schwartz on 12/18.
<b>SLAC-01</b>	DU-600 kg plates; 150kg scrap-containers with kitty litter for storage.	Roger Sit, Stanford Linear Accelerator, learned at the Workshop that DOE wasn't interested in recycling DU due to low quantities complex-wide and that he could dispose of as radiation waste, which he will be doing in the near future.
<b>SR-90</b>		
<b>SNL_AL-03</b>	RTG/SR-9.	Per Dave Parks, NISSMG, this issue is being worked, but is waiting for the ROD on EIS for mixed low level waste. Per Warren, Sandia National Laboratories, Albuquerque, this is a complex-wide issue with RTGs, and DOE is trying to solve the issue for all sites by locating one area to dispose of all RTGs rather than have each site act independently.
<b>Technology</b>		
<b>ORNL-02</b>	Assessing the quantity of DUF6 in cylinders. Technology needed.	INEEL's pins technology is a possible solution. Contact/follow-up information as noted at the Workshop was forwarded to Lance Mezga. He will initiate the contact with Pete Castle.

Category	Site's Materials Needs	Needs Status
<b>ORNL-03</b>	Technology needed; alpha radiolysis studies conversion of U233 nitrate solutions to stable oxide, separation of Thorium from vacuum downloading process for U233, cylinder integrity verification, nonintrusive determination of cylinder value, DU beneficial reuse, cylinder reuse.	Per Tom Wynn, DOD ORO, this issue is being worked within NMFA, however it is a costly, long-term process.
<b>SNL_AL-05</b>	Re-evaluate existing Sandia NMFA needs.	Per Warren Strong, Sandia National Laboratories, Albuquerque, Sandia now has a task agreement in place with NISSMG to address their nuclear materials disposition and Sandia's needs specifically. This contact was made at the Workshop.
<b>Transportation</b>		
<b>ANL_E-06</b>	Need transportation means to move old lead shielded casks.	John Herman, who represented ANL-East at the Workshop, hasn't called Mike Klines. Terry Lang, ANL-East's Facility Manager, (responsible person at ANL-East) has marked this as an issue to be worked in 2003, so until then, it will be on hold. Steve Hamp, National Transportation Program, has referred the packaging issue to his packaging group to resolve.
<b>EML-02</b>	LEU - need to transport/disposition. Two liters U233/U235 potential Gubka.	A disposal pathway is being worked with Jim Low, NISSMG, (initial contact made at the Workshop). First disposal will be by the end of FY02 (NISSMG timetable). Depending on costs, might consider a second option of using Brookhaven Nat'l Lab to disposition items (Brookhaven contact made at the Workshop).
<b>UF6</b>		
<b>ANL_E-02</b>	Cylinder with uranium hexafluoride (UF6).	Per Greg Hulet, WET, a contract has recently been put in place so he is now ready to contact the Site and work the issue.

Category	Site's Materials Needs	Needs Status
<b>FDF-03</b>	Cylinders w/UF6.	Per Greg Hulet, WET, a contract has recently been put in place. Greg is now ready to contact the Site and work the issue.
<b>Waste</b>		
<b>BOEING-01</b>	Sludge (mixed waste). Potential for use with Gubka.	Referred to WET.
<b>BOEING-03</b>	Sludge mixed waste from process water.	Ravnesh Amar, Boeing, has not made contact with Dick Govers, Nochar contact for WET, or Tom Klasso, SAMMS contact for WET; he did not have the contact information for them. The Phone numbers for Dick Govers and Tom Klasso were forwarded to Ravnesh, and he will make the follow up calls.
<b>FDF-02</b>	Blending of enriched restricted nuclear materials to send to waste - characterization issues.	Due to NMFA's site visit and their efforts, FDF has just been awarded \$1M from ASTD for this project. Per Dennis, they will bid and purchase the equipment this year and do the blending next year.
<b>FDF-04</b>	Silo 3 material control when vacuumed; waste.	Per Dennis Cook, there have been ongoing communications since the Workshop with NMFA and Idaho who are now working directly with the silo people on alternatives.
<b>TJL-03</b>	Determine cut off for deuterium recyclability of contaminated waste.	Helen Belencan, DOE HQ (301/903-7921) is working on the recycle guidelines.

Category	Site's Materials Needs	Needs Status
DEFINITIONS:		
ANL_E-Argonne Nat'l Lab		
BJ-Bechtel Jacobs Co. LLC		
BNL-Brookhaven Nat'l Lab		
Boeing-Boeing		
EML-Environmental Measurements Lab		
FDF-Fluor Daniel Fernald		
GE-GE Nuclear		
Energy		
LANL-Los Alamos Nat'l Lab		
LBL-Lawrence Berkeley Lab		
LLNL-Lawrence Livermore Nat'l Lab		
NTS-Nevada Test Site		
ORNL-Oak Ridge National Lab		
SLAC-Stanford Linear Accelerator Lab		
SNL_AL-Sandia Nat'l Labs, Albuquerque		
SNL_L-Sandia Nat'l Labs, Livermore		
TJL-Thomas Jefferson Lab		
WASTREN-WASTREN, Inc.		

**Figure 3.6**

## Needs List by Service Provider

Service Provider	Site's Materials Needs	Needs Assignment	Comments and Status
<b>WET</b>			
<b>ANL_E-02</b>	Cylinder with uranium hexafluoride (UF <sub>6</sub> ).	Greg Hulet/WET	Per Greg Hulet, WET, a contract has recently been put in place so he is now ready to contact the Site and work the issue.
<b>ANL_E-03</b>	Lead casks.	Greg Hulet/WET	Greg Hulet, WET, is meeting with OR to discuss various recycling efforts.
<b>ANL_E-04</b>	Cyanide solutions /sulfide (reactive gas).	John Herman/Argonne Nat'l East	The Workshop evaluation form stated that Susan Carson was at LANL, however, she is actually at Sandia. Susan's phone number was emailed to John Herman for follow-up.
<b>ANL_E-05</b>	Lead acid battery.	Greg Hulet/Wet and Dennis Cook/Fluor Daniel Fernald	Greg Hulet, WET, is in the process of getting a contract in place to cover disposal of all lead batteries; previous contract has expired. New contract should be in place by Mid March.
<b>BOEING-03</b>	Sludge mixed waste from process water.	Ravness Amar/Boeing	Ravness Amar, Boeing, has not made contact with Dick Govers, Nochar contact for WET, or Tom Klasso, SAMMS contact for WET; he did not have the contact information for them. The Phone numbers for Dick Govers and Tom Klasso were forwarded to Ravness, and he will make the follow up calls.

<b>Service Provider</b>	<b>Site's Materials Needs</b>	<b>Needs Assignment</b>	<b>Comments and Status</b>
<b>FDF-03</b>	Cylinders w/UF6.	Greg Hulet/NISSMG	Per Greg Hulet, WET, a contract has recently been put in place. Greg is now ready to contact the Site and work the issue.
<b>FDF-04</b>	Silo 3 material control when vacuumed; waste.	NMFA	Per Dennis Cook, there have been ongoing communications since the Workshop with NMFA and Idaho who are now working directly with the silo people on alternatives.
<b>FDF-05</b>	Batteries.	Greg Hulet/NISSMG and Dennis Cook/Fluor Daniel Fernald	Greg Hulet, WET, to provide a contract to cover disposal of all lead batteries. The new contract should be in place by mid March.
<b>GE-05</b>	Contaminated liquids-no characterization.	Carlos Martinez/GE Nuclear Energy	Carlos Martinez, GE, was under the impression that there was not a pathway forward since the sealed sources are privately owned-not DOE. Carlos was informed that DOE is legally responsible for all GTCC waste, which includes privately owned materials. Carlos will continue with pathway forward outlined at the Workshop by following up with NISSMG.
<b>LBL-03</b>	Contaminated concrete/lead.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>LLNL-02</b>	Oversized boxes; need packaging.	Greg Hulet/WET	Per Greg Hulet, WET, this issue has been worked somewhat, but due to decreased funding, further work will have to wait until the next fiscal year.
<b>LLNL-03</b>	Classified materials.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.

<b>Service Provider</b>	<b>Site's Materials Needs</b>	<b>Needs Assignment</b>	<b>Comments and Status</b>
<b>SLAC-02</b>	Activated lead.	Greg Hulet/WET	Lead was shipped to Envirocare in Utah for disposal which was very costly; will use Rich Meeker (contact made at workshop) for future disposal. Lead had to be disposed of quickly due to non-compliance issues and there wasn't enough time to work it through Rich Meeker.
<b>SLAC-03</b>	Lead acid batteries.	Greg Hulet/WET	Greg Hulet, WET, to provide a contract to cover disposal of all lead batteries. The new contract should be in place by mid March.
<b>SLAC-04</b>	Tritium in oil; no characterization.	Roger Sit/Stanford Linear Accelerator Center	Roger Sit, Standord Linear Accelerator, has not had time to make contact with Dick Govers, Nochar contact for WET, as directed at the Workshop.
<b>SLAC-05</b>	Deuterium gas-not a problem now - potential future problem.	Roger Sit/Stanford Linear Accelerator Center	Roger Sit, Stanford Linear Accelerator, has not had time to make contact with the gas provider as outlined at the Workshop.
<b>TJL-02</b>	Lead activated/lead contaminated.	Greg Hulet/WET	Greg Hulet, WET, has a meeting scheduled with OR to discuss various recycling efforts.
<b>TJL-03</b>	Determine cut off for deuterium recyclability of contaminated waste.	Debbie Malone/NMFA	Helen Belencan, DOE HQ (301/903-7921) is working on the recycle guidelines.

Service Provider	Site's Materials Needs	Needs Assignment	Comments and Status
DEFINITIONS: ANL_E-Argonne Nat'l Lab BJ-Bechtel Jacobs Co. LLC BNL-Brookhaven Nat'l Lab Boeing-Boeing EML-Environmental Measurements Lab FDF-Fluor Daniel Fernald GE-GE Nuclear Energy LANL-Los Alamos Nat'l Lab LBL-Lawrence Berkeley Lab LLNL-Lawrence Livermore Nat'l Lab NTS-Nevada Test Site ORNL-Oak Ridge National Lab SLAC-Stanford Linear Accelerator Lab SNL_AL-Sandia Nat'l Labs, Albuquerque SNL_L-Sandia Nat'l Labs, Livermore TJL-Thomas Jefferson Lab WASTREN-WASTREN, Inc.			

**Figure 3.7**

## SITE'S PROGRAM SPONSORS

Site Sponsor	Site Name
EM	Boeing WASTREN, Inc.
EM, NE, DP	Bechtel Jacobs-Portsmouth
EM, NNSA, NE	Westinghouse Savannah River
EM-40	Fluor Daniel Fernald
EM-50	Environmental Measurements Laboratory
N/A	GE Nuclear Energy
NE	Oak Ridge National Laboratory
NE, EM, DP	East Tennessee Technology Project
NNSA	Bechtel Nevada LLNL Los Alamos National Laboratory Sandia National Laboratory-Albuquerque Sandia National Laboratory-Livermore
Office of Science	Argonne National Laboratory-East Lawrence Berkeley Laboratory Stanford Linear Accelerator Center Thomas Jefferson National Accelerator Facility

**Figure 3.8**

**DOE Small Sites Needs Workshop  
September 11-12, 2001**

**In-Scope Site Attendance by Operations Office**

**Albuquerque Operations Office**

**Attended**

**ACD** THE LOVELACE INSTITUTES, INHALATION TOXICOLOGY RESEARCH INSTITUTE  
**ALA** SANDIA NATIONAL LABORATORIES, ALBUQUERQUE  
**ALD** SANDIA NATIONAL LABORATORY, LIVERMORE  
**AUA** LOS ALAMOS NATIONAL LABORATORY  
**AVJ** WASTREN, INC.

**Did Not Attended**

**AQA** HONEYWELL, FEDERAL MANUFACTURING & TECHN, KANSAS CITY PLANT  
**AWA** BWXT Pantex, LLC.

**Chicago Operations Office**

**Attended**

**CCB** U. S. DEPARTMENT OF ENERGY, ENVIRONMENTAL MEASUREMENTS LABORATORY  
**CZA** ARGONNE NATIONAL LABORATORY, ILLINOIS SITE  
**CZD** BROOKHAVEN SCIENCE ASSOCIATES, BROOKHAVEN NATIONAL LABORATORY

**Did Not Attended**

**CAK** AMES LABORATORY, IOWA STATE UNIVERSITY  
**CBJ** U. S. DEPARTMENT OF ENERGY, NEW BRUNSWICK LABORATORY  
**CCA** PRINCETON PLASMA PHYSICS LABORATORY, PRINCETON UNIVERSITY  
**CCS** BWX TECHNOLOGIES, INC., LYNCHBURG TECHNOLOGY CENTER  
**CWA** FERMI NATIONAL ACCELERATOR LABORATORY  
**CZC** ARGONNE NATIONAL LABORATORY - WEST

**Idaho Operations Office**

**Did Not Attended**

**JAB** U.S. DEPARTMENT OF ENERGY, IDAHO OPERATIONS OFFICE  
**JRK** BECHTEL BWXT IDAHO, LLC, SPECIFIC MANUFACTURING CAPABILITIES  
**JXI** BECHTEL BWXT IDAHO, LLC, IDAHO NUC. TECH. & ENG. CENTER (INTEC)

**Nevada Operations Office**

**Attended**

**NAE** BECHTEL NEVADA

**Oak Ridge Operations Office**

**Attended**

**FXA** BECHTEL JACOBS COMPANY LLC, US DOE PORTSMOUTH GASEOUS DIFFUSION PLANT  
**FZE** BECHTEL JACOBS COMPANY LLC, EAST TENNESSEE TECHNOLOGY PARK  
**FZG** UT-BATTELLE, LLC, OAK RIDGE NATIONAL LABORATORY  
THOMAS JEFFERSON ACCELERATOR FACILITY

**Did Not Attended**

**FBF** OAK RIDGE INSTITUTE FOR, SCIENCE AND EDUCATION  
**FCC** MATERIALS AND CHEMISTRY LABORATORY, INC.  
**FCW** BWX TECHNOLOGIES, INC.  
**FDD** BNFL, INC., ETTP-3, D&D RECYCLE PROJECT  
**FYC** BECHTEL JACOBS COMPANY, LLC.

## **Oakland Operations Office**

### **Attended**

**LAE** ROCKETDYNE DIVISION, ROCKWELL INTERNATIONAL

**LAZ** GENERAL ELECTRIC / NUCLEAR ENERGY, VALLECITOS NUCLEAR CENTER

**LXA** STANFORD LINEAR ACCELERATOR CENTER, STANFORD UNIVERSITY

**LZB** UNIVERSITY OF CALIFORNIA, LAWRENCE LIVERMORE NATIONAL LAB

### **Did Not Attended**

**LAW** GENERAL ATOMICS

**LZA** UNIVERSITY OF CALIFORNIA, LAWRENCE BERKELEY LABORATORY

## **Ohio Operations Office**

### **Attended**

**GVC** FLUOR DANIEL FERNALD

### **Did Not Attended**

**GVB** BWXT OF OHIO, INC.

**GWH** U. S. DEPARTMENT OF ENERGY, WEST VALLEY DEMONSTRATION PROJECT

## **Pittsburgh Naval Reactors Office**

### **Did Not Attended**

**PCR** BWX TECHNOLOGIES, INC.

**PZA** BECHTEL BETTIS, INC., BETTIS ATOMIC POWER LABORATORY

**PZB** BECHTEL BETTIS, INC., NAVAL REACTORS FACILITY

## **Richland Operations Office**

### **Did Not Attended**

**HYA** BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST NATIONAL LABORATORY

## **Savannah River Operations Office**

### **Attended**

**DZA** WESTINGHOUSE SAVANNAH RIVER

## **Schenectady Naval Reactors Office**

### **Did Not Attended**

**KAS** NUCLEAR FUEL SERVICES, INC.

**KZA** KNOLLS ATOMIC POWER LABORATORY, LOCKHEED MARTIN CORPORATION - KAPL, INC

## Appendix A

# WORKSHOP EVALUATION

## COMMENTS

### Argonne National Laboratory-East

Herman, John

Before break-outs, instruct Sites to make contacts briefly; can't solve all problems at once. Do not monopolize provider's time, other sites may need to speak to them also. Very useful workshop. Brent did a good job. We should have more of these workshops.

### Bechtel Nevada

Hohman, Ed

Mound should be invited to a future workshop. Good suggestions from NTP and NMFA. Liked being able to go around and talk to the wide range of Service Providers. Until the workshop, I wasn't even aware of some of these Service Providers. Workshop was very helpful and informative.

### DOE-CH

Dietzel, Dale

DOE-CH will work with Ames Lab and Fermi Lab. Excellent workshop - real answers or points of contacts for problem solving.

### DOE-Environmental Measurements Lab

Raccah, Fabien

If contractors, per-say, were invited to future workshops, that would be helpful. West Valley should be invited to future workshops. Good one-on-one for pre-planning regarding disposal pathways. Clarity of presentations and follow-ups or analysis and win-win proposal (pre-proposal)

### DOE-NV

Smiecinski, Ralph

More sites were listed as interested, but did not attend. Need more representation from all sites. Maybe positive feedback from this workshop will increase participation. Under the circumstances (9/11/01 terrorist attacks), the meeting was well facilitated and turned out more valuable than expected!

---

## COMMENTS

---

### DOE-ORO

Hutchins, David

Perhaps add a service provider for NDA/NDE capabilities information/focus. Interaction at larger sites with smaller sites might promote more beneficial cooperation and solutions.

Wynn, Tom

Include DOE-ORO-EM subcontractors as service providers. Get more small sites involved.

### Fluor Daniel Fernald

Cook, Dennis

Time allotted to the break-out sessions was sufficient. The Service Providers were very helpful. The other four Ohio field office sites should be invited to future workshops. Move locations from one meeting to another so other sites might attend. Give greater attention to advertising the workshops. I thought the meeting was very useful and was a good start at getting issues for small sites on the table. From this start, the next meeting should expand the attendance base of small sites and bring in more of the focus area.

### GE Nuclear Energy

Martinez, Carlos

Recommendations for future workshops: 1) Invite commercial LLRW service providers, 2) Review of site WACs, and 3) LLRW characterization

### Los Alamos National Laboratory

Kitten, Susanne

Possibly invite a Service Provider with expertise in dealing with gaseous waste as opposed to solids. Invite SRS Tritium Ops, Mound Tritium Ops, LLNL Tritium, SRL at LANL (Michael Blau) to future workshops. If the DOE complex can identify problems, we "all" have a path forward that may be more easily established. You all did a good job. Any additional Service Providers would be interesting and helpful. Mark Mintz?

Rupprecht, Ward

Invite mobile decon teams to future workshops. Need more tritium/gases SMEs at the workshops. Good Job - Thanks!

---

## COMMENTS

---

### Oak Ridge National Laboratory

Mezga, Lance

Invite other small SC sites. Post information from workshop to a web site.

Smith, Max

Time before the meeting is needed for attendees to absorb the handout material. Presentations were informative and educational regarding other capabilities and expertise throughout the complex. Are there Service Providers for areas such as disposal of orphans. Invite Padducah and Portsmouth Gaseous Diffusion Plants to future workshops. Satisfied with the direction received from the workshop especially on packaging issues. Would a workshop of this type be useful to the commercial companies and universities that hold DOE loan/lease material? Very helpful and informative. I believe the objectives of getting the Service Providers together with the smaller organizations that have difficult or unique disposal/disposition needs.

### Office of Science

Castle, Pete

I think things went well.

Schwartz, Ray

The value of the workshop was in making contacts and understanding the organizational infrastructure for dealing with radioactive waste problems. I see a tendency for too many in DOE to try to solve problems with resources they are aware of -- which works most of the time but not always.

### OSRP

Leonard, Shelby

Actually, 1.5 days may have been enough.

Montoya, Frank

Could be accomplished in one long day.

### Sandia National Laboratories-Albuquerque

Strong, Warren

I would have liked to have talked to an NTS LLW facility representative. Sandia has already "chased" many disposition leads, so much of the guidance was of little additional value. Break-out sessions were a little chaotic. Perhaps sessions between providers and sites could be scheduled with a bit more structure. There was a lot of cross-talk between sites which may have diluted the effectiveness; or perhaps the cross-talk actually added value. This workshop was excellent for networking purposes. Disposition is a highly global effort, requiring a high level of integration. I presume that the workshop was very helpful for small sites just beginning the process of dispositioning material. I'm sure this moved them way up the learning curve. GOOD JOB! Thanks!

---

## COMMENTS

---

### **Sandia National Laboratories-Livermore**

**Shackelfoot, Lynn**

I found it to be very helpful and fun for me. I was able to come back with information on how to handle problems that I didn't know which way to start. All I can say is thanks again for all your help!

### **Stanford Linear Accelerator Center**

**Sit, Roger**

Other sites should attend future workshops if for no other reason than to help NISSMG and NMFA see how large some problems are for priority purposes.

### **Thomas Jefferson National Accelerator Facility**

**May, Robert**

Fermilab should be invited to future workshops. Helpful and informative - good networking and I learned a lot about technical capability in various DOE offices. The format was very workable.

### **WASTREN, Inc.**

**Dow, Dan**

The Service Providers' presentations were what I needed. This workshop helped out site. We were able to make contact with OSRP to make arrangements to dispose of our Am/Be logging probe tips this next FY. Thank you! Very good!

### **Westinghouse Savannah River**

**Hottel, Bob**

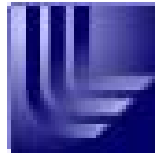
PMMG would be glad to attend future workshops as appropriate. I thought the meeting was very beneficial. The small sites appeared to be very pleased with the help offered. It was obviously a relief to many of them that this type of assistance was available.

# Appendix A

## Announcements and Invitations



*Nonactinide Isotopes & Sealed Sources  
Management Group (NISSMG)*



*Nuclear Materials Focus Area (NMFA)*

## **WORKSHOP INFORMATION PACKET**

### **SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP Tuscany Hotel, Las Vegas, NV April 23-25, 2002**

The following items are included in this Workshop packet:

- Preliminary Agenda
- Workshop Synopsis
- Service Provider Statements
- Hotel amenities and reservation information
- Report summarizing the Joint NISSMG/NMFA Small Sites Needs Workshop held in September 2001
- Registration Form
  - There will NOT be a registration fee charged to attend this Workshop
  - Completed registration forms must be submitted by 3/20/02
  - Presentations must be submitted by 4/05/02
- Yucca Mountain Tour Access Information (Thursday, 04/25/02)

**\*\* IMPORTANT \*\***

**Hotel reservations must be made on or before 3/23/02 in order to take advantage of staying at the Workshop center for \$72 per night. Reservations received after 3/23 will be accepted on an “availability” basis only and may be subject to a higher “non-group” rate.**



*Nonactinide Isotopes & Sealed Sources  
Management Group (NISSMG)*



*Nuclear Materials Focus Area (NMFA)*

## **PRELIMINARY AGENDA**

### **SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP April 23-25, 2002**

**Tuscany Hotel  
255 East Flamingo Road  
Las Vegas, NV 89109**

#### **Tuesday, April 23, 2002**

- |              |  |
|--------------|--|
| 8:00 AM      | Introduction <ul style="list-style-type: none"><li>• Logistics</li><li>• Agenda/Format</li></ul> |
| 8:15 AM      | Service Provider Presentations   |
| 10:15 AM     | Break  |
| 10:30 AM     | Success Stories  |
| 12:00 PM     | Lunch - Served in Foyer of Palazzo Restaurant (provided by Workshop)                             |
| 1:15 PM      | Site Presentations   |
| 3:00 PM      | Break  |
| 3:15 PM      | Site Presentations (continued)   |
| 4:30 PM      | Site to Service Provider Connections Planning  |
| 5:00/5:30 PM | Meeting Adjourned  |

**Wednesday, April 24, 2002**

- |          |  |
|----------|--|
| 8:00 AM  | Introduction/Agenda for Today's Workshop<br>• Remarks                |
| 8:15 AM  | Service Provider/Sites Connections                                   |
| 10:15 AM | Break  |
| 10:30 AM | Service Provider/Sites Connections (continued)                       |
| 12:00 PM | Lunch - Served in Foyer of Palazzo Restaurant (provided by Workshop) |
| 1:15 PM  | Service Provider/Sites Connections (continued)                       |
| 3:00 PM  | Break  |
| 3:15 PM  | Service Provider/Sites Connections (continued)                       |
| 4:00 PM  | Paths Forward, Final Needs Registration and Closeout                 |
| 5:00 PM  | Meeting Adjourned  |

**Thursday, April 25, 2002**

- |         |   |
|---------|---|
| 6:00 AM | Yucca Mountain Tour – Meet in Tuscany Hotel Lobby for 6 AM Bus Pickup |
| 4:00 PM | Tour Bus Arrives Back at the Tuscany Hotel                            |



*Nonactinide Isotopes & Sealed Sources  
Management Group (NISSMG)*



*Nuclear Materials Focus Area (NMFA)*

---

**SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP**  
**Tuscany Hotel, Las Vegas, Nevada**  
**April 23-25, 2002**

**Workshop Synopsis**

The purpose of the Joint NISSMG/NMFA Small Sites Needs Workshop is to provide opportunity for small DOE sites to meet and discuss, register, and open pathways for remediation of nuclear material related issues at their sites. This meeting is sponsored by the DOE/EM-50 Nuclear Materials Focus Area and the DOE AL/EM-20 Nuclear Materials Stewardship Program and hosted by the Lawrence Livermore National Laboratory. The meeting provides a unique forum to connect sites having nuclear materials needs with Service Providers that provide services, which can create pathways toward remediation and/or disposition.

Several new Service Providers will be participating in this second Workshop. The following Service Providers will bring presentations outlining the unique assistance they can provide to resolve existing and future nuclear materials issues for small sites:

- Nuclear Materials Focus Area (NMFA)
- Nonactinide Isotope and Sealed Source Management Group (NISSMG)
- Waste Elimination Team (LLW-WET)
- TRU Waste Elimination Team (TRU-WET)
- Waste Generator Assistance and Technical Support (WATS) Program
- Off-site Source Recovery Project (OSRP)
- Legacy Weapon Component Processing
- Isotopes for Medicine and Science
- National Transportation Program
- Tritium Recovery and Recycle Program

Each site attending should also be prepared to give a 15-minute presentation of their site's nuclear materials needs allowing an overall view of their issues and issue registration. Sites will also be provided the opportunity for more detailed discussions with Service Providers in breakout groups during the workshop. Sites attending the workshop should be prepared to formally register for the workshop.

Each breakout group will share a report of the Service Provider findings (i.e., handoffs, no paths, win-wins, problem sharing). Site needs, directions, and actions will be discussed and registered along with service provider opportunities and actions. Guidance will be given to individual sites as to the path forward for their issues.

**Outcome**

Currently, small sites interactions are ad hoc. This meeting will proactively increase small site needs awareness and provide awareness of the services/assistance that is available through the service providers. It will also provide an assessment of small site needs registered there and facilitate activities with sites to provide them with existing nuclear materials management and disposal options.

A Nuclear Materials Focus Area materials needs assessment will be prepared at the end of the meeting. This report will provide technology needs assessment, highlight integration opportunities, and point out transportation and packaging requirements, as well as a basis for future service provider resource requirements to support the small sites within the DOE complex.

**SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP**  
**Tuscany Hotel, Las Vegas, Nevada**  
**April 23-25, 2002**

**Service Provider Statements**

**NATIONAL TRANSPORTATION PROGRAM** — The National Transportation Program (NTP) develops and maintains the DOE corporate transportation resources, including the coordination and development of DOE-wide transportation policy, to assure the availability of safe, regulatory compliant, and cost efficient transportation for DOE materials, including radioactive and other hazardous materials and wastes. The central focus of a corporate transportation resource is not transportation itself, but rather the achievement of critical DOE program goals dependent upon transportation for successful program execution.

The program scope includes: 1) maintenance of a baseline of shipping assumptions by site across EM waste and material types and development of a needs analysis to identify gaps in the shipping assumptions; 2) resolution of transport issues at the program and site level; 3) tracking of transportation safety performance; 4) maintenance of a corporate institutional program to interact with national and regional transportation stakeholders; 5) provide consistent and systematic campaign planning support to DOE sites for specific transportation plans; 6) conduct a forward-looking, aggressive transportation technology program to resolve complex transportation and packaging problems and to confront regulatory excesses; and 7) provide operational support of packaging and shipping activities both on and off-site across the DOE complex.

The NTP is managed by a joint team from DOE Headquarters (EM-24), Albuquerque Operations Office, and Idaho Operations Office having crosscutting responsibilities with all DOE elements, while organizationally reporting to the Assistant Secretary for Environmental Management (EM-1).

The NTP's services are targeted to three DOE customer groups: 1) transportation managers, both DOE and contractors at all Operations and Field offices; 2) selected DOE sites that are preparing environmental assessments and environmental impact statements, and developing campaign specific transportation plans; and 3) EM programs and sites that manage radioactive waste and nuclear materials. Additionally, NTP targets an external set of customers that includes national and regional stakeholders whom are active in transportation planning.

The programmatic mission for NTP is divided into three product lines: Transportation Planning and Integration; Transportation Operational Services; and Packaging and Technology Services. These product lines provide a corporate transportation infrastructure to meet DOE's mission requirements. The purpose of the Transportation Planning and Integration product line is to achieve a forward-looking, system-wide assessment of the department's transportation and packaging needs and to provide consistent campaign planning to assure DOE policy and transportation objectives are met. Within the Transportation Operational Services product line, support activities provide a comprehensive and coordinated effort to achieve the goal of having a safe, regulatory compliant, and cost effective transportation system and operations. The purpose of the Packaging and Technology Services product line is to serve as the Department's technical base program to support transportation and packaging requirement needs, and to provide a systematic approach for packaging resource utilization complex-wide.

**NON-ACTINIDE ISOTOPES AND SEALED SOURCES MANAGEMENT GROUP —**

The Non-actinide Isotopes and Sealed Sources Management Group's (NISSMG) scope is chartered to assist with issues relating to excess, orphaned materials, including a wide variety of radionuclides, all radioactive isotopes with  $Z < 90$  (non-actinide), man-made isotopes and excess loan lease (non-licensed) materials at universities and in industry throughout the DOE complex. They provide assistance to closure sites and mechanisms for use, reuse, and recycle of materials. The group has several success stories including the Mound site closure Pu-238 project and transportation assistance, Fernald site disposition maps for enhanced closure planning and inclusion with receiver site plans, and Rocky Flats where the group provided new options for disposition for orphaned small sources. The group is currently assisting Hanford, Battelle Columbus, Oak Ridge, Sandia, and LLNL with disposition planning and remediation services.

Smaller sites can expect direct assistance at the workshop with their needs from the NISSMG. The group is prepared to work with your site to begin the scoping and planning stages and offer valuable advice and perspective to you toward remediation of your issues.

**NUCLEAR MATERIALS FOCUS AREA —** The Nuclear Materials Focus Area (NMFA) is part of the Office of Science and Technology (OST, EM-50) focus-area-centered approach to managing the development of technology for the Office of Environmental Management (EM). The NMFA is chartered to develop and deploy technology to nuclear materials needs across the DOE complex. Primary technical scope includes the processing, stabilization, packaging, transportation, storage and transferring of nuclear materials currently in the custody of EM. The scope also includes such issues within the whole DOE complex.

Upon needs integration and registration with the NMFA, smaller sites can expect that their needs will be included in the annual NMFA "call for technology development" where larger sites and service providers propose assistance, technology application or technology development to help solve their needs.

**OFF-SITE SOURCE RECOVERY PROJECT —** The Off-site Source Recovery Project (OSRP) recovers and manages unwanted radioactive sealed sources and other radioactive material that:

- Present a risk to public health and safety
- Present a potential loss of control by a Nuclear Regulatory Commission (NRC) or agreement state licensee
- Are excess and unwanted and are a U.S. Department of Energy (DOE) responsibility under Public Law 99-240, or are DOE-owned.

The project is sponsored by DOE's Office of Technical Program Integration (EM-22) and the Albuquerque Operations Office Waste Management Division and operates from Los Alamos National Laboratory (LANL). It focuses on the problem of sources and devices held under U.S. Nuclear Regulatory Commission or agreement state licenses for which there is no disposal option. The project was reorganized in 1999 to more aggressively recover and manage the estimated 18,000 sealed source devices that will become excess and unwanted over the next decade. This reorganization combined three activities, the Radioactive Source Recovery Program, the Off-site Waste Program, and the Pu-239/Be Neutron Source Project.

In FY 2002 the OSRP and its companion project the Off-site Waste Recovery Project (OSW) will be actively recovering actinide-bearing sealed sources from other DOE sites and accepting them at LANL where they will be packaged as TRU Waste and disposed of at the WIPP if eligible or stored if eligibility is in question for WIPP disposal. Sources without a direct disposal path will be made available for recycle and reuse where appropriate. At the beginning of FY 2002, the project will be excepting sources containing primarily Am-241 and Pu-238. It is hoped that Pu-239 sources will begin to be accepted later in the FY. Funding transfers to support recoveries of sealed sources will be based on program transfers between sites with the concurrence of DOE AL Waste Management Division.

In addition to recovery and acceptance of sealed sources, the OSRP can offer assistance in establishing DOT special form certification for undocumented sealed source material, as well as providing shielded storage and transport containers which are compatible with WIPP disposal.

**OFFICE OF ISOTOPES FOR MEDICINE AND SCIENCE** — The Office of Isotopes for Medicine and Science routinely sell stable and radioactive isotopes worldwide for research and commercial applications. They operate as a revolving fund. Thus, revenues generated from sales are credited to a dedicated treasury account that is available immediately for program use.

When they work with other DOE organizations, they pay for services and products from the revolving fund, then revenue from sales replenishes what they have drawn. Thus, other organizations can benefit directly by interacting with them on a work-for-others basis, whereas if they sell products themselves, proceeds go to a general treasury account and are not available to the selling organization.

They sell everything from light gases to transuranics and have worked with most major DOE sites to move products. They have extensive contacts in the isotope market and can generally provide a quick assessment as to whether a surplus product can be sold.

The point of contact is Mr. John Carty at (301/903-1649; John.Carty@HQ.DOE.GOV).

**TRITIUM RECOVERY AND RECYCLE PROGRAM** — Lawrence Livermore National Laboratory's (LLNL) Tritium Program (as part of the Nuclear Materials Technology Program) routinely recovers tritium from obsolete illumination devices provided by the U.S. Army Operations Support Command. The arrangement benefits the environment and has resulted in reduced disposition costs to the Army when compared with disposal without recovery. Recently, approval to supply similar services (services not commercially available) to a private company was granted by DOE. For both entities illumination devices or device parts containing tritium (usually in glass ampoules) are transferred to LLNL and then processed at the Tritium Facility. Tritium has also been recovered from Mound, Sandia, and LBL solid hydride beds that are then inerted (rendered non-pyrophoric). Recovered tritium is reused at LLNL or transferred to DOE's Savannah River Site. Debris and unusable residual parts enter the facility's approved waste stream.

The LLNL Tritium Program is interested in expanding these services to additional, qualified government and non-government organizations.

The point of contact for the LLNL Tritium Program is Mark Mintz (925/422-8394; mintz1@llnl.gov).

**TRU WASTE ELIMINATION TEAM (T-WET)** — The TRU and Mixed Waste Focus Area (TMFA) is sponsoring a TRU Waste Elimination Team (T-WET) to work with the sites to remove their TRU wastes thereby reducing the DOE footprint and/or supporting small site closure. The T-WET consists of subject matter experts that work with the small-quantity sites to identify the technology deficiencies and regulatory concerns related to the transfer of their wastes to an interim storage facility or the Waste Isolation Pilot Plant (WIPP). The T-WET will work with the sites to establish a path forward for addressing the problems and tracking progress towards solution(s).

The T-WET can help sites plan their characterization, and if necessary, treatment strategies to meet shipping and WIPP waste acceptance criteria. Specific activities that the T-WET will accomplish are:

1. Identify and quantify issues and concerns associated with the characterization, treatment, transport, and disposal of TRU waste at each site
2. Determine effective characterization, treatment, and transportation alternatives
3. Identify a path forward for resolving regulatory concerns and storage/disposal issues
4. Ensure that the necessary waste technologies are available when needed
5. Leveraging with other sites to establish mechanisms to characterize, treat and dispose of similar waste
6. Identify key DOE and commercial points-of-contact.

Examples of issues that must be addressed include identification of characterization techniques – particularly for RH wastes, handling alternatives for sites that no longer have hot-cell capabilities, treatment alternatives for wastes with prohibited items (e.g., free liquids, PCBs, etc.), and appropriate transportation packages to optimize waste shipment. Resolution of these issues may be achieved through the use of innovative/alternative technology selection or development, regulatory changes, or administrative changes.

The point-of-contact for the T-WET is Whitney St. Michel (208/526-3206; whitney@inel.gov).

**WASTE ELIMINATION TEAM** — The Waste Elimination Team (WET) is sponsored by the TRU and Mixed Waste Focus Area (TMFA) to provide technical and engineering solutions to complex-wide MLLW problems. The WET consists of subject matter experts throughout the DOE complex that identify problematic MLLW streams and, working through “principal investigators” at affected sites, establish a path forward for all similar DOE waste.

The WET can help sites ensure that nuclear materials are stored, characterized, treated, and packaged in a way that will support disposal when they are declared “waste.” In addition, the WET can help sites:

1. Ensure that the necessary waste technologies are available when needed
2. Identify and quantify problematic wastes
3. Determine effective treatment and disposal alternatives
4. Combine with other sites to establish mechanisms to treat and dispose of similar waste
5. Identify key DOE and commercial points-of-contact

Examples of problematic waste streams that the WET is currently working on include gas cylinders, uranium and thorium chips, batteries, elemental mercury, and mercury-contaminated

solids/liquids. Waste streams that are slated for work in FY 2002 include a tritiated waste survey, oversized boxes and components, classified materials and waste, and reactives. Examples of technologies being deployed are the No-Char process for stabilizing/solidifying organic liquids and sludges, thermal desorption for PCB contaminated wastes, and gas vitrification for solid and liquid wastes requiring incineration.

The point-of-contact for the WET is Greg Hulet (208/526-0283; hag@inel.gov).

**WASTE GENERATOR ASSISTANCE AND TECHNICAL SUPPORT (WATS)**

**PROGRAM** — WATS provides assistance and technical support to generators shipping low-level waste to the Nevada Test Site disposal or classified low-level waste for storage. Services provided include:

1. Assistance on low-level waste issues, including criteria interpretation and compliance guidance for Nevada Test Site Waste Acceptance Criteria and related activities
2. Preliminary review of generator documents, waste profiles, waste certification documentation and corrective action plans
3. Technical assistance for policy, regulatory, and operational issues
4. On-site visits to the generator's facility to assist in the identification and resolution of technical, programmatic, and operational issues prior to the annual RWAP audit

The point-of-contact for WATS is Leroy Duran (702/295-7245; duran@nv.doe.gov).

**WEAPON COMPONENT PROCESSING** — Lawrence Livermore National Laboratory (LLNL) Nuclear Materials Technology Program. Research and development of processes for the disposition of plutonium weapon components.

1. Recover of plutonium and uranium using hydrogen mining
2. Plutonium melting and casting
3. Recovery of plutonium using aqueous processing
4. Sanitization of plutonium contaminated non-SNM parts
5. Plutonium decontamination using CO<sub>2</sub> cleaning

The main customers for this work are Rocky Flats and Savannah River, with some DOE- MD support. The developed technology will be used for the new pit disassembly plant that will be built at Savannah River. Nuclear Materials Focus Area (DOE-EM-50) is a major supporter for a process for a specific plutonium weapon component that is an issue at Rocky Flats and Savannah River. In the past, items have been processed from small sites such as Mound.

The point of contact for Weapon Component Processing is Dr. Michael Blau (925/ 424-4212; blau1@llnl.gov).

## SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP

April 23-25, 2002

**Workshop Center  
Tuscany Hotel  
255 East Flamingo Road  
Las Vegas, NV 89109  
[www.tuscanylasvegas.com](http://www.tuscanylasvegas.com)**

A block of “suite” sleeping rooms has been set-aside at the Tuscany Hotel at a rate of \$72 per night. Please call the **Tuscany Group Reservations Department at (877) 887-2261** and mention that you will be attending the “Lawrence Livermore National Laboratory/DOE Small Sites Workshop” to make your reservations. **Reservations must be made on or before 3/23/02.** Reservations received after 3/23 will be accepted on an “availability” basis only and may be subject to a higher “non-group” rate.

The Tuscany Hotel is a new hotel; opened in December, 2001. The Tuscany is located just 1.5 blocks from the fabulous Las Vegas Strip and offers a number of features:

- Over sized guest “Suites” in a European setting
- 24-hour coffee shop, complimentary valet parking, concierge service and room service
- Complimentary fitness center
- Lagoon styled outdoor swimming pool
- Pay-per-view movie and music access
- Nintendo for the children
- Television Internet access
- Electronic in-room safe
- Hairdryer, microwave, coffee maker and refrigerator
- Free shuttle service to and from the “Strip”
- Palazzo Ristroante, Piazza Lounge, and Cabana Bar and Grill
- Americans with Disabilities Act (ADA) compliant with handicapped rooms on all floors

### **Additional Information (mileage and transportation charges are estimated)**

- **Sorry...no airport shuttle**
  - One mile from McCarran International Airport (LAS)
  - \$12 - \$16 one-way cab from McCarran International Airport (up to four persons)
  - Airport shuttle transportation to the Tuscany Hotel (\$5 one way, \$9 round trip – per person)
- Located behind Bally’s, just 1.5 blocks from the Las Vegas Strip
- Ten miles to downtown Las Vegas (Fremont Street Experience)
- Thirty minutes to Hoover Dam and Lake Mead
- Six hours to Grand Canyon (North or South Rims)
- Four hours to Bryce and Zion National Parks
- Close to championship golf courses
- Close to three shopping malls and an outlet mall
- Call the hotel Concierge to set up golf tee times, shopping or touring excursions

*Nonactinide Isotopes & Sealed Sources  
Management Group (NISSMG)*



*Complex-Wide Resources  
Solving Site Specific Problems*



*Nuclear Materials Focus Area (NMFA)*

## **Joint NISSMG and NMFA Small Sites Needs Workshop**

### **September 11-12, 2001**

### **Introduction**

During its interaction with DOE sites, the Nonactinide Isotopes and Sealed Sources Management Group (NISSMG)<sup>a</sup> and the Nuclear Materials Focus Area (NMFA)<sup>b</sup> have jointly observed widely varying capabilities in the ability to manage nuclear materials. The sites with more difficulties managing these materials are primarily the closure sites and small sites. To date, the NISSMG has focused its efforts on closure sites, specifically Mound, Fernald, Rocky Flats, and Ashtabula. Given the

preponderance of issues with DOE sites holding large inventories of nuclear material, sites with smaller holdings may not be adequately understood and supported in their management of nuclear materials. To increase its technical assistance to small sites, the NISSMG and NMFA jointly teamed with other EM based service providers to conduct a workshop for DOE sites with small nuclear material inventories (referred to as small sites).

### **Small Sites Needs Workshop**

The first Small Sites Needs Workshop was conducted on September 11<sup>th</sup> and 12<sup>th</sup>, 2001 in Las Vegas, Nevada. This workshop was coordinated and hosted by Lawrence Livermore National Laboratory (LLNL) with support from the Idaho National Engineering and Environmental Laboratory (INEEL) and Sandia National Laboratories (SNL). Small sites with accountable amounts of nuclear materials were expressly invited to attend, and larger sites with similar needs were also welcomed to participate. Forty-eight participants attended

the workshop, representing 19 small sites, eight service providers, various DOE offices, and the workshop organizers (See Figure 1). Twenty-seven other small sites indicated an interest in the workshop, but that they were unable to participate at this time due to budgetary and travel restrictions.

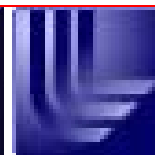
Both service providers and sites gave presentations at the workshop. At breakout sessions, sites had time to interact one-on-one with the service providers to discuss their specific needs in more detail. These



Idaho National Engineering  
and Environmental Laboratory



Sandia  
National  
Laboratories





attendance at the workshop.

The meeting proceedings provide a first step in the identification and resolution of small site nuclear material management issues. A small sites needs assessment report with an analysis of the workshop data is planned for fiscal year 2002. Nearly all of the sites that

could not attend the first workshop mentioned that they would attend a future one, and in addition, several sites in attendance at the first workshop stated that they would attend a future one to keep current.

<sup>a</sup> The Nonactinide Isotopes and Sealed Sources Management Group (NISSMG) is sponsored by the Department of Energy (DOE) Office of Environmental Management and is managed by the Albuquerque Operations Office to serve as a complex-wide resource for the management of DOE-owned Nonactinide Isotope and Sealed Source (NISS) materials. NISS materials are defined as including (1) any isotope in sealed sources or standards and (2) isotopes with atomic number less than 90, regardless of form. The NISSMG assists DOE sites with the storage, reuse, disposition, transportation, and processing of these materials.

<sup>b</sup> The mission of the Nuclear Materials Focus Area is to develop and deploy technology relevant to the management of excess nuclear materials by:

- Identifying technology needs and defining technology requirements
- Identifying comprehensive technical solutions to the defined needs
- Managing projects to develop, demonstrate and deploy technology to implement technology solutions
- Accelerating technology development by leveraging Focus Area investments with site contributions and
- Fostering economies of scale through multi-site deployments



Idaho National Engineering  
and Environmental Laboratory

INEEL



Sandia  
National  
Laboratories



## SECOND JOINT NISSMG/NMFA SMALL SITES NEEDS WORKSHOP

# Tuscany Hotel, Las Vegas, Nevada

**April 23-25, 2002**

## Registration Form / Site Presentation Confirmation

## Submit by March 20, 2002

☐ Mr.    ☐ Mrs.    ☐ Ms.    ☐ Dr.    ☐ Professor

First Name

MI

Last Name

Job Title

Company or Organization

## Street Address

Department/Mail Stop

City

State

### Zip & 4/Postal Code

Phone

Fax

Email

Special Requirements (wheelchair or other)

***NOTE: There will not be a registration fee charged to attend this workshop***

## Site Presentation

In order to get an overall view of site issues, each site is requested to present a 15-minute overview of their needs. Please include 1) if you are a closure site or have a facility to close, and/or 2) if technology development or implementation is needed to remedy your need.

The title of my presentation will be \_\_\_\_\_

## Audio/Visual Equipment

The following A/V equipment will be available: tripod screen, overhead projector, computer capable projector (RGB and USB capable), Macintosh iBook computer, and a Zip and CD drive. Please indicate what other A/V equipment will be needed: \_\_\_\_\_

**Please submit an electronic copy of your presentation to Debbie Malone at LLNL (malone2@llnl.gov) by April 5, 2002 to allow time to prepare the Workshop handouts.**

**Fax completed form by 3/20/02 to:**  
**Debbie Malone**  
**Fax: (925) 423-1685**

For more information or questions, contact:  
Debbie Malone (malone2@llnl.gov)  
Phone: (925) 422-0546

## Yucca Mountain Tour ACCESS INFORMATION

Thank you for your interest in touring the Yucca Mountain Site. The following information is needed to access the Nevada Test Site. If you have any questions, please contact Debbie Malone at (925) 422-0546. **Fax completed forms to (925) 423-1685 by March 20, 2002.**

Name: \_\_\_\_\_  
(Last) (First) (M-Initial)

Company Name: \_\_\_\_\_

Title: \_\_\_\_\_ Work Phone: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_, \_\_\_\_\_  
(City) (State) (Zip)

Home Phone Number: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Social Security Number: \_\_\_\_\_ U.S. Citizenship: \_\_\_\_\_(Y/N)

Place of Birth: \_\_\_\_\_,  
(City) (State)

Special needs/requirements (Y/N)\_\_\_\_\_ Specify:\_\_\_\_\_

Tour Date: April 25, 2002

Breakfast: \_\_\_\_ Yes \_\_\_\_ No (Guest Cost is \$4.00)

Lunch: \_\_\_\_\_(Turkey, Ham, Roast Beef, Veggie) (Guest Cost is \$9.00)

- **A maximum of 50 people will be allowed on the tour. Only the first 50 registrations will be accepted. Others will be put on a "wait list".**
- **Unfortunately, non US citizens will not be allowed to go on this tour; a 70-day prior notice is required for processing. THERE CAN BE NO EXCEPTIONS.**
- **Test Site regulations prohibit the use of cameras, recording equipment, firearms, binoculars, and alcoholic beverages. These items are NOT permitted on site.**
- **All guests are required to bring their photo identification at the time of access check. Guests will be required to wear their DOE badge while on the tour.**
- **Breakfast and Lunch -- Guests are responsible for paying for the cost of their breakfast and/or lunch. Cash payments will be required when signing in the first day of the Workshop. The box meals are the only option available for food/beverage while on the tour.**
  - **A box breakfast consisting of a large breakfast muffin, fruit and juice is available for \$4.00.**
  - **A box lunch is provided by Marie Callender, which includes a sandwich of your choice, pasta/potato salad, fruit, pie and a soft drink for \$9.**
- **Clothing Requirements:**
  - **Long pants, shirts with sleeves (no tank tops or dresses are allowed), and sturdy leather shoes with socks (no sandals or open toed shoes allowed).**

Following is an email from Jim Low dated March 22, 2002:

From: Jim Low  
Sent: March 22, 2002 10:20 AM  
Subject: Second Joint NISSMG/NMFA Small Sites Issues Workshop

On behalf of DOE/AL, Jim Low, Acting Director of the Nuclear Material Stewardship Project Office, would like to invite you to the Second Joint NISSMG/NMFA Small Sites Issues Workshop being held in Las Vegas, NV on April 23-25, 2002.

The purpose of the Joint NISSMG/NMFA Small Sites Needs Workshop is to provide opportunity for small DOE sites to meet and discuss, register, and open pathways for remediation of nuclear material related issues at their sites. This meeting is sponsored by the DOE/EM-50 Nuclear Materials Focus Area and the DOE AL/EM-20 Nuclear Materials Stewardship Program and hosted by the Lawrence Livermore National Laboratory. The meeting provides a unique forum to connect sites having nuclear materials needs with Service Providers that provide services which can create pathways toward remediation and/or disposition.

Please see following for more information and contacts.

United States Government

Department of Energy  
Albuquerque Operations Office

# memorandum

DATE: March 21, 2002  
REPLY TO: NMSPO:GDR  
SUBJECT: DOE Small Sites Nuclear Materials Issues Support Workshop  
TO: **Distribution**

You are invited to Second Joint NISSMG –NMFA Small Sites Issues Workshop, to be held in Las Vegas, NV, April 23-25, 2002 at the Tuscany Hotel. The purposes of the Small Sites Workshop address the programmatic and operational nuclear material management needs of small sites in the DOE complex. This meeting is sponsored by the DOE/EM-50 Nuclear Materials Focus Area and the DOE AL/EM-20 Nuclear Materials Stewardship Program and hosted by the Lawrence Livermore National Laboratory (LLNL). The meeting provides a unique forum to connect sites having nuclear materials needs with Service Providers that provide services, which can create pathways toward nuclear material disposition and/or site remediation. This notification reiterates an informal announcement provided by LLNL through electronic mail on February 26, 2002.

Several new Service Providers will be participating in this second Workshop. The following Service Providers will bring presentations outlining the unique assistance they can provide to resolve existing and future nuclear materials issues for small sites:

- Nuclear Materials Focus Area (NMFA)
- Non-actinide Isotope and Sealed Source Management Group (NISSMG)
- Waste Elimination Team (LLW-WET)
- TRU Waste Elimination Team (TRU-WET)
- Waste Generator Assistance and Technical Support (WATS) Program
- Off-site Source Recovery Project (OSRP)
- Legacy Weapon Component Processing
- Isotopes for Medicine and Science
- National Transportation Program
- Tritium Recovery and Recycle Program

Each site attending should also be prepared to give a 15-minute presentation of their site's nuclear materials needs allowing an overall view of their issues and issue registration. Sites will also be provided the opportunity for more detailed discussions with Service Providers in breakout groups during the workshop. Sites attending the workshop should be prepared to formally register for the workshop and complete a questionnaire for registration.

Each breakout group will share a report of the Service Provider finding (i.e., handoffs, win-wins, problem sharing). Site needs, directions, and actions will be discussed and registered along with service provider opportunities and actions. Guidance will be given to individual sites as to the path forward for their issues.

Please indicate your interest in this workshop by providing your response to LLNL Debbie Malone (925) 422-0546, email: [malone2@llnl.gov](mailto:malone2@llnl.gov). Debbie will contact you with the appropriate registration information.

If you have any questions, please contact myself at (505) 845-5458 or G. D. Roberson at (505) 845-5805.

A handwritten signature in dark ink, appearing to read "James Low". The signature is fluid and cursive, with the first name "James" being more prominent than the last name "Low".

James Low  
Acting Director  
Nuclear Materials Stewardship  
Project Office.

# Appendix B

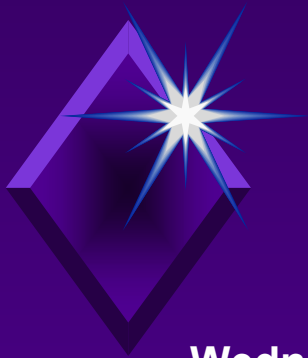
## Workshop Agenda



# *Agenda*

**Tuesday, April 23, 2002**

- |           |  |
|-----------|--|
| 8:00 AM   | Introduction <ul style="list-style-type: none"><li>• Logistics</li><li>• Agenda/Format</li></ul>                     |
| 8:15 AM   | Service Provider Presentations   |
| 10:15 AM  | Break  |
| 10:30 AM  | Service Provider Presentations (continued)   |
| 12:00 PM  | Lunch (provided by Workshop) <ul style="list-style-type: none"><li>• Served in Foyer of Palazzo Restaurant</li></ul> |
| 1:15 PM   | Site Presentations   |
| 3:00 PM   | Break  |
| 3:15 PM   | Site Presentations (continued)   |
| 4:30 PM   | Site to Service Provider Connections Planning  |
| 5-5:30 PM | Meeting Adjourned  |



# *Agenda*

**Wednesday, April 24, 2002**

8:00 AM Introduction/Agenda for Today's Workshop

- Remarks

8:15 AM Service Provider/Sites Connections

10:15 AM Break

10:30 AM Service Provider/Sites Connections (continued)

12:00 PM Lunch (provided by Workshop)

- Served in Foyer of Palazzo Restaurant

1:15 PM Service Provider/Sites Connections (continued)

3:00 PM Break

3:15 PM Service Provider/Sites Connections (continued)

4:30 PM Paths Forward, Final Needs Registration and Closeout

5:00 PM Meeting Adjourned



# *Agenda*

**Thursday, April 25, 2002**

6:00 AM Yucca Mountain Tour

- Meet in Tuscany Hotel Lobby for 6 AM Tour Bus Pickup

4:00 PM Tour Bus Arrives Back at the Tuscany Hotel

# Appendix C

## Breakout Group Information

## APPENCIX C BREAKOUT GROUP INFORMATION

WORKSHOP PARTICIPANT	NISSMG	NMFA	LEGACY WEAPON	NFS	NTP	OIMS	OSRP	TRITIUM RECOVERY	WATS	WET	TOTAL
Ames	XXX			XXXX		X	XX				10
ANL-E	XXX					XX	X				6
Bechtel NV		X	XX		X		XX	X		XXX	10
BNL	XX						X	XXX	X	XXXX	11
GE	X									XXX	4
Honeywell	XX				X		XX		X		6
Isotope Products					XXX						3
LANL	XXXXXX							X	X		8
LBL				X		X	XX				4
LLNL				X		XXX					4
NISSMG						X					1
OIMS										X	1
ORNL	X					X	XX			XXX	7
PNNL	X					X				X	3
Portsmouth	X			X						X	3
SNL-Alb.	XXX		X	XX	X	XXX			XXX		13
SNL-Lvr.	X		X								2
Westinghouse SR		X									1
<b>TOTAL</b>	<b>24</b>	<b>2</b>	<b>4</b>	<b>9</b>	<b>6</b>	<b>13</b>	<b>12</b>	<b>5</b>	<b>6</b>	<b>16</b>	<b>97</b>

\* Note: These connections were made via breakout groups conducted at the Workshop. Not all are new needs.  
A detailed needs analyses is forthcoming in June 2002.

# Appendix D

## Evaluation of Workshop by Attendees

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES

### 2<sup>nd</sup> Joint NISSMG/NMFA Small Sites Needs Workshop April 23-25, 2002

#### QUESTION/COMMENTS

#### ATTENDEE RESPONSES

**Are you satisfied with the direction and the assistance received from the workshop for your site's materials issues?**

YES: 30                      NO: 0

*Comments:*

1. *Informative both for sites' needs and service provider function.*
2. *Discovered one very good lead to problem!*
3. *Absolutely essential information was provided for disposition paths.*
4. *We probably could have used more time to discuss our site's needs and to identify services provided.*
5. *Great presentations*
6. *Excellent discussions regarding services provided by PNNL. Site's needs were discussed by several service providers.*
7. *Greater number of problem holders and service providers made communications between all parties easier.*

**Was Las Vegas a convenient location for the workshop?**

YES: 35                      NO: 0

*Comments:*

1. *Good spot!*
2. *In general, Las Vegas is the best place for this type of meeting*
3. *Cheap airfare available.*
4. *Las Vegas is relatively easy to get to and from. An east coast meeting, however, would be nice every now and then.*
5. *For the most part, I was not particularly pleased with the hotel*
6. *Excellent, cheap, safe, and wonderful weather.*

**Was a two-day workshop sufficient time to cover the material?**

YES: 31                      NO: 2

*Comments:*

1. *To adequately acquire detailed inventory information would require a 5-day workshop.*
2. *I felt a little rushed through all the discussions, so a little more time could have been helpful.*

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

3. *Just about right.*
4. *Good time management by Brent and other workshop coordinators.*

### Did you find the site presentations helpful?

YES: 33      No: 0

#### Comments:

1. *The similarities among site challenges were interesting.*
2. *In the future, it might help if sites sent in lists of problems that would then be sent to the service providers before the workshop.*
3. *We saved considerable travel and time expense!*
4. *Excellent!*
5. *Multi reasons; knowledge, issues, and good practices.*

### Was enough time allotted to the breakout groups?

YES: 31      NO: 3

#### Comments:

1. *It would be nice if there were a little more flexibility in the breakout time limits. We ran long a few times.*
2. *Well orchestrated!*
3. *A little flexibility might make it even better.*
4. *We (WET) had enough time to interface with the sites.*

### Was there sufficient representation from the service providers?

YES: 32      NO: 2

#### Comments:

1. *If WET is only allotted 15 minutes on future programs, then the meeting needs to be extended.  
WET needs more time than that to adequately address all of their activities.*
2. *Very good presentations and excellent discussions.*

### Is there another service provider that should be invited to future workshops?

YES: 11      NO: 9

#### Comments:

1. *Packaging.*
2. *NRC.*
3. *Mobile units for WIPP (TRU) certification.*

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

4. *Maybe CSMO.*
5. *Pu MMG might be able to provide solutions next time.*
6. *Perhaps Envirocare, Barnwell.*
7. *Envirocare and Hanford*
8. *Perhaps the National TRU Waste Program since there are a few TRU waste questions.*
9. *Envirocare, Utah could be invited.*

**Is there another site you know of that could benefit from attending a future workshop?**

YES: 11

NO: 14

*Comments:*

1. *Global Nuclear Fuel – Americas, Wilmington, NC (formerly GE Nuclear Energy-Wilmington).*
2. *Paducah Gaseous Diffusion Plant.*
3. *Need to somehow motivate additional small sites to attend.*
4. *Hanford!*
5. *Sites located east of the Mississippi may attend eastern location.*
6. *You should let the complex know and let them decide if they wish to participate.*
7. *PPPL/Fermi.*
7. *Many of the small TRU waste sites were not participating.*
8. *The two or three that Brent announced at the workshop.*

**Was there a specific technology that would be helpful?**

YES: 11

NO: 10

*Comments:*

1. *Liquid waste solidification would be helpful. Also treatment facilities that solidify liquids.*
3. *Prompt Gamma/Pu 3013 characterization.*
4. *Something to help us with disposal/disposition of non-defense related low activity sources that exceed Class C limits by a hair.*  
*Some standardized process to render the waste Class C, utilizing the NRC technical position paper as guidance to allow for lawful concentration averaging.*
4. *Recycling material for other industrial applications.*
5. *Since all of these sites have to ship material or waste somewhere, a demonstration of logistics management tools available and related resources might be helpful.*

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

6. *All the technologies through the NTS and Jim Low's group were the most helpful to me.*
7. *Information on solid carbon dioxide blasting will be useful.*
8. *WET.*

**Would you recommend those sites unable to attend this workshop attend any future workshops?**

YES: 31

NO: 0

*Comments:*

1. *It was very helpful to hear other sites' issues, find out what services are available and get names of contacts.*
2. *If such sites need to disposition material, they should attend this workshop.*
3. *Unless all problems involve a single service provider.*
4. *Broadens knowledge base of solutions and others with similar problems.*
5. *Networking most valuable.*

**What suggestions do you have to improve future workshops?**

1. *Produce a booklet that has service providers listed and the type of material they deal with; reference material.*
2. *Better control over presentation formats. Suggest using a PC instead of a Mac, with sufficient memory and a zip drive for presentations.*
3. *Evaluate true interfaces between materials and waste programs and interactions.*
4. *I was very impressed with this meeting!*
5. *Check the copies to ensure the color doesn't get blacked out.*
6. *Provide pre-registration list to develop sidebar meetings.*
7. *Well designed and run as is.*
8. *Allocate time for detailed breakout sessions. Perhaps have two workshops; one in the east and one in the west portions of the country conducted one week apart.*
9. *Hope you have this workshop continue next year also.*
10. *This is an excellent opportunity for the NTP to receive information for updating packaging and transportation issues at one workshop. It is very informative to hear what is available and what is needed.*
11. *I'd like to see more acknowledgement from DOE HQ. I didn't see clear participation from such groups as EM-21, EM-22 or EM-23. I also believe these small sites need a senior management champion that can interface with EM-1.*
12. *Assuming there is a future workshop, maybe the efforts should be combined so people don't have to try to attend a WET meeting and a Small Sites Workshop.*
13. *Las Vegas is a great place to hold the meeting.*
14. *Resolve funding issues for future workshops, SC?*

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

### Additional Comments:

1. *Need more pay phones in area.*
2. *Need to contact universities with research reactors on site (i.e., TX – A&M, etc.) to see if they're interested in addressing their needs.*
3. *I found this Workshop to be extremely beneficial. Being able to interface with service providers and the Waste Elimination Team will result in their assistance in helping solve Portsmouth's problematic waste stream issues. As a result of this Workshop, Portsmouth will have a path forward for over 1,000 drums of legacy waste. Other sites within the DOE family should be active workshop participants, since this is truly a problem solving, forward-looking group of service providers.*
4. *Even better than last time – good facility.*
5. *Need a regroup meeting once the NMFA dissolves into new group. Having this meeting saved me from making another special trip to Las Vegas for the NTS issue.*
6. *Thanks for the opportunity to meet the groups, discuss practical solutions and exchange critical, time-sensitive information on solving some of DOE's problems.*
7. *One of the most productive workshops I've participated in; a real service to the complex.*
8. *The NMFA wishes to sincerely thank LLNL for hosting the Workshop and particularly the exemplary efforts of Ms. Debbie Malone, Ms. Judi Wells and Mr. Brent Ives. Without them, such a successful workshop would not have been possible.*
9. *Tour of Yucca Mountain was very interesting.*
10. *Excellent workshop. I now have a path forward to some of my issues because of this workshop.*
11. *I thought it was a helpful workshop and hope to see more of them. Simply discussing issues with one site is also helpful.*
12. *Don't hold workshop at "unproven" motel!*
13. *I liked having NNSA sites participate with non-NNSA sites so the two organizations could work together to resolve materials issues.*
14. *I believe the sites with ties to USEC/NRC, like Portsmouth and Paducah, should continue to participate in the workshop and propose that sponsorship of this workshop next year be expanded to include the NRC.*
15. *The personnel sponsoring the workshop have a vast amount of knowledge, and it is apparent these workshops are very useful to the sites in solving issues.*
16. *Workshop was put together very well.*
17. *The workshop was organized very well.*
18. *I felt being able to interact with our facilities was really informative and allowed networking with them that could assist each other in solving disposition problems.*
19. *Enjoyed the Yucca Mountain tour; very interesting.*

## RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

20. *Well planned, staffed, and run. I regret that Westinghouse Savannah River did not have time to clear through our external information office presentations concerning technology developed to measure off-gas leakage from food pack cans of material. The small sites probably would not have been interested in it, but a number of the service providers probably would have been very interested.*
21. *This process, while in its infancy, is absolutely critical to providing support for the small sites' issues.*
22. *Several very valuable connections by service providers and sites' needs were indeed identified.*
23. *As you move forward with this endeavor, I would like you to think about how to bring in outside service providers or industrial representatives or users.*
24. *I believe that we (Isotope Products) were able (from an industrial users point of view) to make connections that could help us in our efforts to recycle material back into industry without having to import material from other international producers. We, as an industrial/medical device manufacturer, would consider it a privilege to participate in future workshops.*
25. *Hold speakers to time schedule.*
26. *Much better workshop this year than last; last year was excellent too.*
27. *Debbie went out of her way to "workout" a way for me to attend the Yucca Mountain Tour ending at 4 PM, with a flight scheduled at 6 PM! Also, my name was left off the roster and she printed out extra copies of a revised list for my use! Great workshop Brent, Debbie; others did a terrific job!*